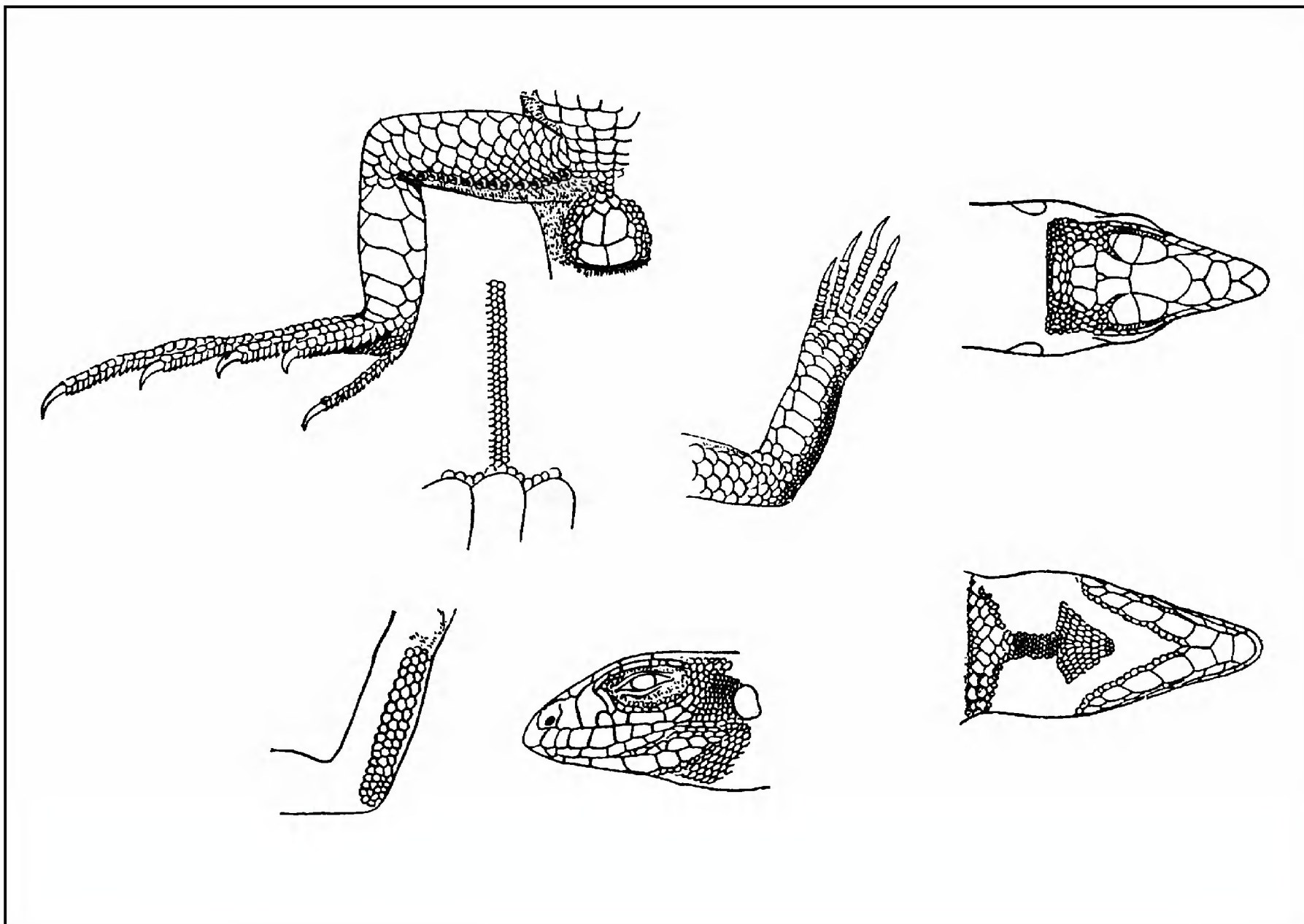

BULLETIN

of the

Chicago Herpetological Society



Volume 33, Number 4
April 1998



BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY

Volume 33, Number 4

April 1998

Early Herpetological Observations by a Northeastern Wisconsin Conservationist	Philip A. Cochran	73
Parthenogenetic <i>Cnemidophorus tesselatus</i> Complex (Squamata: Teiidae) at Higbee, Otero County, Colorado: Research between 1950 and 1998	James M. Walker and James E. Cordes	75
HerPET-POURRI	Ellin Beltz	85
Currently Happening Stuff	Gary Kostka	88
Herpetology 1998		91
Unofficial Minutes of the CHS Board Meeting, March 13, 1998		94
Advertisements		95

Cover: Six-lined racerunner, *Cnemidophorus sexlineatus*. Drawing adapted from "The Crocodilians, Lizards, and Snakes of North America" by Edward Drinker Cope, 1900, Part II of the Annual Report of the U.S. National Museum for the Year Ending June 30, 1898.

STAFF

Editor: Michael A. Dloogatch
Copy editor: Jill Horwich
Advertising Manager: Ralph Shepstone

1998 CHS Board of Directors

Steve Spitzer, President
Jack Schoenfelder, Vice-President
Gary Fogel, Treasurer
Jennifer Picciola, Recording Secretary
Lori King-Nava, Corresponding Secretary
Michael A. Dloogatch, Publications Secretary
Gino Martinez, Membership Secretary
Ron Humbert, Sergeant-at-Arms
Karen Bielski, Member-at-Large
John Driscoll, Member-at-Large
Audrey Vanderlinden, Member-at-Large
Jenny Vollman, Member-at-Large

The Chicago Herpetological Society is a nonprofit organization incorporated under the laws of the state of Illinois. Its purposes are education, conservation and the advancement of herpetology. Meetings are announced in this publication, and are normally held at 7:30 P.M., the last Wednesday of each month.

Membership in the CHS includes a subscription to the monthly *Bulletin*. Annual dues are: Individual Membership, \$22.00; Family Membership, \$25.00; Sustaining Membership, \$50.00; Contributing Membership, \$100.00; Institutional Membership, \$38.00. Remittance must be made in U.S. funds. Subscribers outside the U.S. must add \$12.00 for postage. Send membership dues or address changes to: Chicago Herpetological Society, Membership Secretary, 2060 N. Clark Street, Chicago, IL 60614. Publications are sent to U.S. members via third class bulk mail; the post office does not forward such mail, even if a special request is made to forward magazines.

Manuscripts published in the *Bulletin of the Chicago Herpetological Society* are not peer reviewed. Manuscripts should be submitted, if possible, on IBM PC-compatible or Macintosh format diskettes. Alternatively, manuscripts may be submitted in duplicate, typewritten and double spaced. Manuscripts and letters concerning editorial business should be sent to: Chicago Herpetological Society, Publications Secretary, 2060 N. Clark Street, Chicago, IL 60614. **Back issues** are limited but are available from the Publications Secretary for \$2.50 per issue postpaid. **Visit the CHS home page at** <<http://www.Chicagoherp.org>>.

The BULLETIN of the Chicago Herpetological Society (ISSN 0009-3564) is published monthly by the Chicago Herpetological Society. Copyright © 1998.

Early Herpetological Observations by a Northeastern Wisconsin Conservationist

Philip A. Cochran
Division of Natural Sciences
St. Norbert College
De Pere, Wisconsin 54115

Abstract

William Fisk, a locally prominent conservationist in northeastern Wisconsin, recorded observations on amphibians and reptiles during the mid-1940s. These include the collection of a northern water snake in Marinette County, the discovery of central newts overwintering in an ant mound, and a listing of amphibians and reptiles observed near Point Comfort along Green Bay.

Introduction

William J. Fisk (1918–1989) was a native and resident of the Green Bay, Wisconsin, area. Although he made his living through general insurance and consulting, he was an active conservationist. For example, he served as a National Director of the Izaak Walton League for many years, and he was considered the resident environmentalist of the Green Bay Chamber of Commerce Governmental Affairs Forum. One of Fisk's lifelong hobbies was raising tropical and native fish in aquaria. I first made his acquaintance because we were both members of the North American Native Fishes Association and we both lived in Wisconsin. When I first moved to the Green Bay area, he advised me about likely spots to collect various species of fish. After his death, his wife Betty donated many of his tanks, fish, and aquarium supplies to the St. Norbert College Biology Department. Included in these effects was a wooden file box for storing 3×5 index cards. On most of the cards in this box are pasted old excerpts from magazines about tropical fish, but 26 cards contain William Fisk's original observations about reptiles and amphibians in northeastern Wisconsin during the period 1944–1947. Some of these observations are still of relevance today, and they are summarized herein.



William J. Fisk (1918–1989)

Organization of the Observations

The observations on the index cards are handwritten in ink. The 26 cards do not represent mutually exclusive sets of information because the same observation of a particular species may be repeated and cross-referenced among cards by common name, scientific name, and locality. Although some of the cards contain records of sightings in the field, others contain series of observations on captive specimens. Common and scientific names used by Fisk and their current equivalents (Collins, 1997) are listed in Table 1.

The Northern Water Snake (*Nerodia s. sipedon*) in Marinette County

Fisk collected a northern water snake along the shore of Sand Lake at Camp Bird in Marinette County in August, 1944. Water snakes have not been reported previously from Marinette County (Vogt, 1981; Casper, 1996), but Vogt (1981) reported their occurrence in Oconto County, which borders Marinette County to the west, and they have been collected on Chambers Island (Door County) in Green Bay to the east (Long et al., 1976; Long, 1993). They have also been reported from the Upper Peninsula of Michigan (Holman et al., 1989; Harding, 1997).

Fisk maintained the water snake from Sand Lake in captivity from August 1944, until at least January 1947. He recorded that it readily ate frogs, including green frogs and leopard frogs, and that it accepted toads when sufficiently hungry. It ate strips of raw fish during the winter. On one occasion, the water snake and a garter snake kept in the same tank grabbed opposite ends of the same toad, and the garter snake was swallowed by the water snake for about two-thirds of its length. The toad escaped in the initial confusion, and the garter snake escaped after being “inside” for over an hour.

Hibernating Central Newts (*Notophthalmus viridescens louisianensis*)

Fisk collected two newts on 7 April 1946 near Bear Paw Lake in the Nicolet National Forest in Oconto County. They were accidentally “kicked” out of hibernation in a large ant hill atop a sandy ridge. He recorded that the temperature was 40°F (4.4°C)—presumably this was the air temperature—and that a frozen pond was located in a hollow approximately 150 yards (137 m) away.

Vogt (1981) suggested that terrestrial-phase newts are uncommon in Wisconsin. If that is the case, newts in Wisconsin presumably overwinter more often in aquatic habitat than in terrestrial situations. Lang (1969; 1984) found redbelly snakes (*Storeria occipitomaculata*), smooth green snakes (*Liophorophis vernalis*), and eastern garter snakes (*Thamnophis s. sirtalis*) hibernating in inactive mounds built by the ant *Formica ulkei* in northern Minnesota. It is unclear from Fisk's notes whether or not the newts he found were in an ant mound that was still active, but newts might be protected from ants by their noxious skin secretions.

Table 1. Common and scientific names used by William Fisk when recording observations made during the period 1944–1947. Modern equivalents (Collins, 1997) are also indicated.

Fisk's Nomenclature	Modern Nomenclature
<i>Triturus viridescens viridescens</i> Common newt	<i>Notophthalmus viridescens louisianensis</i> Central newt
<i>Ambystoma jeffersonianum</i> Jefferson's salamander	<i>Ambystoma laterale</i> Blue-spotted salamander
<i>Hyla crucifer</i> Spring peeper	<i>Pseudacris crucifer</i> Spring peeper
<i>Rana pipiens</i> Leopard frog	<i>Rana pipiens</i> Northern leopard frog
<i>Rana cantabrigensis</i> Northern wood frog	<i>Rana sylvatica</i> Wood frog
<i>Rana sylvatica</i> Wood frog	
(no scientific name used) Green frog	
<i>Bufo americanus</i> American toad	<i>Bufo americanus</i> American toad
<i>Thamnophis sirtalis sirtalis</i> Common garter snake	<i>Thamnophis sirtalis sirtalis</i> Eastern garter snake
<i>Natrix sipedon sipedon</i> Common water snake	<i>Nerodia sipedon sipedon</i> Northern water snake
<i>Heterodon contortrix contortrix</i> Hog-nosed snake	<i>Heterodon platirhinos</i> Eastern hognose snake

The Herpetofauna of the Point Comfort Woods

Point Comfort is located along the eastern shoreline of Green Bay in Brown County. During the period 6–14 April 1946, Fisk recorded five species from the Point Comfort vicinity (blue-spotted salamander, spring peeper, leopard frog, wood frog, eastern garter snake). All three frog species were heard calling during this period.

The species observed by Fisk at Point Comfort are widespread in northeastern Wisconsin (Vogt, 1981; Casper, 1996) and occur together at other sites in Brown County (Cochran,

personal observations). Although I have not surveyed the amphibians and reptiles of the Point Comfort vicinity in a systematic way, I observed a milk snake (*Lampropeltis triangulum*) along State Highway 57 at Gilson Creek on 27 July 1995 and a wood frog along Edgewater Beach Road on 1 September 1996 (both sites are within 7 km northeast of Point Comfort).

Acknowledgments

This article is dedicated to the memory of William Fisk. I thank Betty Fisk for making his records available to me.

Literature Cited

Casper, G. S. 1996. Geographic distributions of the amphibians and reptiles of Wisconsin. Milwaukee, WI: Milwaukee Public Mus.

Collins J. T. 1997. Standard common and current scientific names for North American amphibians and reptiles, 4th edition. Society for the Study of Amphibians and Reptiles, Herpetological Circular No. 25.

Harding, J. H. 1997. Amphibians and reptiles of the Great Lakes region. Ann Arbor, MI: University of Michigan Press.

Holman, J. A., J. H. Harding, M. M. Hensley and G. R. Dudderar. 1989. Michigan snakes: A field guide and pocket reference. Publ. E-2000, Michigan State Univ. Coop. Extension Serv., East Lansing, Michigan.

Lang, J. W. 1969. Hibernation and movements of *Storeria occipitomaculata* in northern Minnesota. J. Herpetology 3:196-197.

———. 1984. Hibernation and movements of *Storeria occipitomaculata* in northern Minnesota. P. 9. In: L. Elwell, K. Cram and C. Johnson, editors, Ecology of reptiles and amphibians in Minnesota, Proceedings of a symposium on March 13-15, 1981 at Bald Eagle Outdoor Learning Center, Cass Lake, Minnesota.

Long, C. A. 1993. Biogeography of the reptiles and amphibians of the Lake Michigan isles. Bull. Chicago Herp. Soc. 28(10):214-218.

Long, C. A., J. E. Long and C. A. Long. 1976. Some amphibians and reptiles from Chambers Island, Green Bay, Lake Michigan. The Jack-Pine Warbler 56:46-47.

Vogt, R. C. 1981. Natural history of amphibians and reptiles of Wisconsin. Milwaukee, WI: Milwaukee Public Mus.

Parthenogenetic *Cnemidophorus tesselatus* Complex (Squamata: Teiidae) at Higbee, Otero County, Colorado: Research between 1950 and 1998

James M. Walker
Department of Biological Sciences
University of Arkansas
Fayetteville, AR 72701

James E. Cordes
Division of Sciences
Louisiana State University at Eunice
Eunice, LA 70535

Abstract

The current extent of knowledge on the evolution, systematics, and distributional ecology of the *Cnemidophorus* guild (Squamata: Teiidae) in and around Ninemile Valley of the Purgatoire River at Higbee, Otero County, Colorado, is based on the cumulative research contributions of numerous scientists over almost 50 years. This system of whiptail lizards, known to include the all-female allodiploid pattern classes (i.e., morphotypes) C and D, presently allocated to *C. tesselatus*, the all-female allotriploid pattern class B, presently allocated to *C. neotesselatus*, and gonochoristic *C. sexlineatus*, is unique within the genus *Cnemidophorus*. Only at approximately 37°46'30"N, 103°27'30"W, in Otero County over the vast geographic range of *Cnemidophorus* are both the diploid and triploid speciation stages in the evolution of a parthenogenetic complex extant and sympatric. This report includes a review of the publications of individuals who have studied *Cnemidophorus* at Higbee, including details concerning their field efforts and research materials. Prospects for future research at Higbee are briefly discussed.

In and around Ninemile Valley of the Purgatoire River at Higbee (i.e., 37°46'30"N, 103°27'30"W), Otero County, Colorado (Figures 1 and 2), is found a four-member guild of *Cnemidophorus* lizards (Squamata: Teiidae) unparalleled among vertebrates in the complexity of their genetic relationships. Knowledge that this guild includes pattern classes C (Figure 3A and 3B) and D (Figure 3C and 3D) presently allocated to the same allodiploid parthenogenetic species, *C. tesselatus*, pattern class B (Figure 3E and 3F) of the allotriploid parthenogenetic species, *C. neotesselatus*, and the gonochoristic species, *C. sexlineatus* reflects the culmination of research efforts of many scientists over the past 50 years. On 31 August 1960, T. P. Maslin and students collected a large sample of *Cnemidophorus* at Higbee which was not only pivotal in pioneering research on the *C. tesselatus* complex by Maslin (1962, 1966) and Zweifel (1965), it was also important in several subsequent studies. Interest generated by the preceding three

publications stimulated other scientists, including E. D. Parker, Jr., B. E. Leuck, J. W. Wright, C. J. Cole, H. L. Taylor, and C. C. Cohn, to visit Higbee and collect specimens, accumulate data, and/or record natural history observations (Parker and Selander, 1976; Parker, 1979a, 1979b; Densmore et al., 1985, 1989; Leuck, 1993; Wright, 1993) which provided the keys to our recent findings on this parthenogenetic complex of lizards (Paulissen et al., 1993; Taylor et al., 1996; Walker et al., 1990, 1994, 1995, 1997, 1998).

The purpose of this paper is to review the complicated history of *Cnemidophorus* research at Higbee (summarized in Table 1). We also include a per diem accounting of the collecting success of various workers at Higbee (Table 2) and a list of the specimens of *Cnemidophorus* either examined or of importance in the publications referenced (see Appendix).

(text continues on page 81)



Figure 1. Lefthand photograph, road 804 southwest off Colorado Highway 109 entering Ninemile Valley of the Purgatoire River at Higbee, Otero County, Colorado (note the escarpment at the right of the road in the distance). Righthand photograph, the north escarpment to Ninemile Valley as viewed from the road 100 m from the stop sign (inhabited by *Cnemidophorus tesselatus* D, *C. neotesselatus* B, and *C. sexlineatus*, but not by *C. tesselatus* C).



Figure 2. Upper photograph, entrance to Vogel Canyon via Ninemile Valley of the Purgatoire River at Higbee, Otero County, Colorado, as viewed to the north (note the escarpment in the background) (*Cnemidophorus tessellatus* C and D, *C. neotesselatus* B, and *C. sexlineatus* have been collected near the entrance to the canyon since 1960 and elsewhere in the valley more recently, but *C. tessellatus* D has not been observed near the entrance to the canyon since 1973). Lower photograph, habitat on the north escarpment to Ninemile Valley, courtesy of B. E. Leuck (only *C. tessellatus* D, *C. neotesselatus* B, and *C. sexlineatus* have been collected on the escarpment).

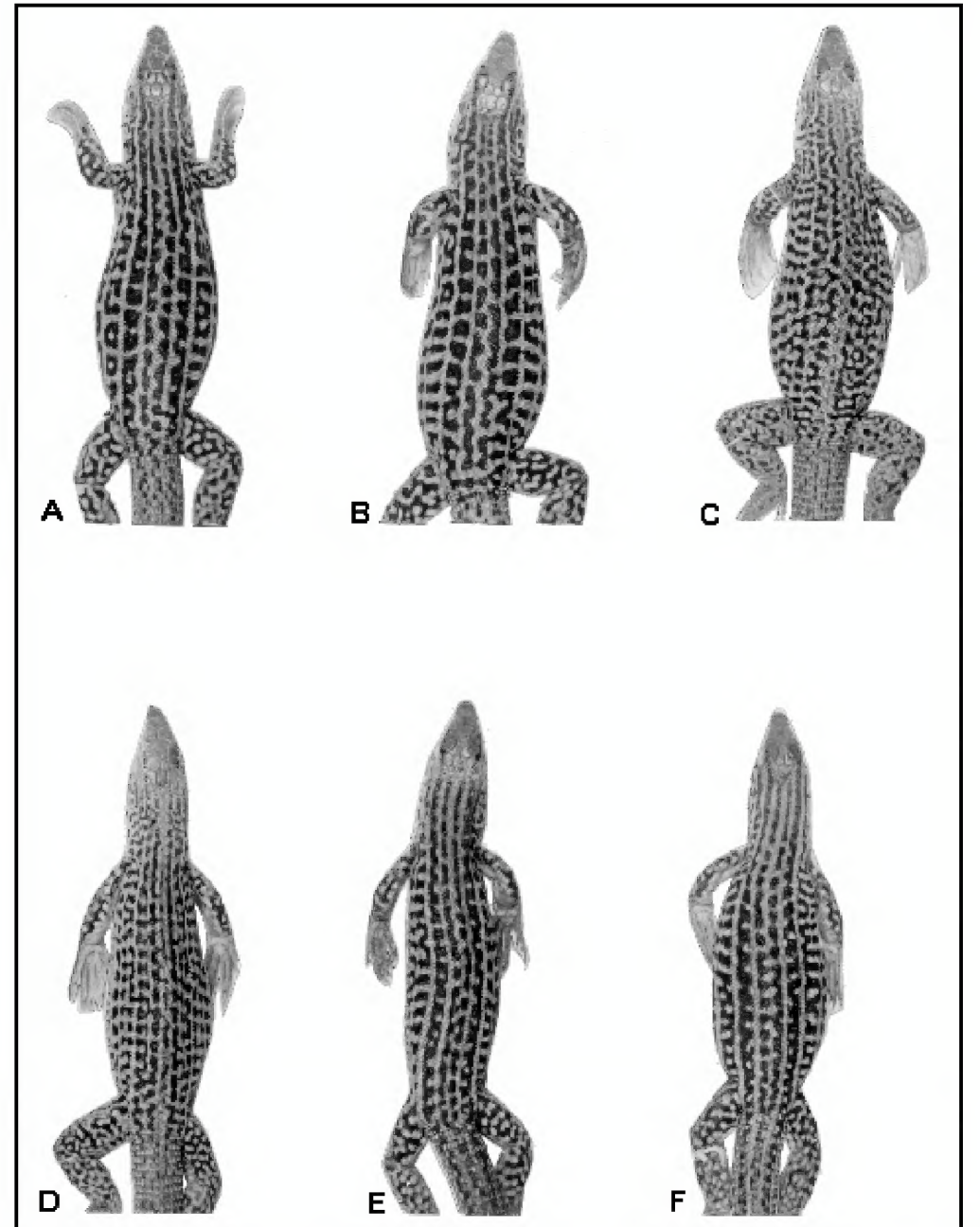


Figure 3. Examples of the three parthenogenetic forms known from the vicinity of Ninemile Valley of the Purgatoire River at Higbee, Otero County, Colorado. *Cnemidophorus tessellatus* C: (A) University of Arkansas Department of Zoology, UADZ 4092 (snout-vent length [SVL] 96 mm) and (B) UADZ 3418 (SVL 105 mm) in the **Higbee-Ninemile Valley, Colorado**, sample. *C. tessellatus* D: (C) UADZ 5003 (SVL 98 mm with unusual dorsal pattern) and (D) UADZ 5006 (SVL 97 mm with typical color pattern) in the **Higbee-Vogel Canyon Trailhead, Colorado**, sample. *C. neotesselatus* B: (E) UADZ 5008 (SVL 98 mm) and (F) UADZ 5007 (SVL 93 mm) in the **Higbee-Vogel Canyon Trailhead, Colorado**, sample.

Table 1. Review of the publications of scientists who have contributed to current knowledge on the evolution, systematics, and distributional ecology of *Cnemidophorus* populations in and around Ninemile Valley of the Purgatoire River at Higbee, Otero County, Colorado.

Publication {Limitations}
♦ Major Contribution(s)
Maslin (1950) {Predated knowledge that populations in the <i>C. tessellatus</i> complex are all-female and parthenogenetic.} Recorded the presence of the <i>C. tessellatus</i> complex in the vicinity of Higbee based on two juvenile specimens (UCM 4955, 4956 = <i>C. tessellatus</i> pattern class D) collected by T. P. Maslin on 15 September 1949 (p. 90).
Maslin (1959) {Predated knowledge that populations in the <i>C. tessellatus</i> complex are all-female and parthenogenetic.} - Discussed problems pertaining to the location of the type locality of <i>C. tessellatus</i> in Colorado (restricted type locality to “... the junction of Fountain Creek and the Arkansas River, Pueblo Co., Colorado”) (p. 41). - Listed all records known for the <i>C. tessellatus</i> complex in Colorado; UCM 4955, 4956, remained the only specimens listed from the vicinity of Higbee.
Maslin (1962) {Predated knowledge that the <i>C. tessellatus</i> complex includes both diploid and triploid pattern classes (i.e., morphotypes).} Additional evidence that the <i>C. tessellatus</i> complex apparently consists entirely of females based in part on a large sample of specimens from Higbee (p. 212).

Table 1 (cont'd)

Publication {Limitations} ◆ Major Contribution(s)
Zweifel (1965) {Predated knowledge of the following: mode of origin of parthenogenetic populations of <i>Cnemidophorus</i>; presence of diploid and triploid populations in the <i>C. tessellatus</i> complex; and basis for distinction between the cryptic <i>C. tessellatus</i> pattern class C and triploid pattern class B at Higbee.} ◆ Listed UCM specimens available for study from Higbee (p. 43). ◆ Further discussion of problems relating to designation of a neotype and type locality for <i>C. tessellatus</i> (p. 36). ◆ Informally described sympatric pattern classes C and D of <i>C. tessellatus</i> at Higbee, mostly based on UCM specimens collected by T. P. Maslin, L. Pennock, and R. Holland on 31 August 1960 (p. 6).
Maslin (1966) {Same as for preceding publication.} ◆ All-female sex of neonates in sample collected 31 August 1960 at Higbee used to support the hypothesis that no males are produced from eggs laid by females belonging to the <i>C. tessellatus</i> complex (p. 375).
Wright and Lowe (1967) {The study was based on specimens of diploid pattern class C and triploid pattern class B from unspecified localities.} ◆ Karyotypic evidence of the presence of both allodiploid and allotriploid populations in the <i>C. tessellatus</i> complex (pp. 95-96). ◆ Karyotypic evidence that allodiploid populations in the <i>C. tessellatus</i> complex represent descendants from one or more hybrids between <i>C. tigris</i> and <i>C. septemvittatus</i> produced in either southern Texas or northern Mexico (pp. 95-96). ◆ Karyotypic evidence that allotriploid populations in the <i>C. tessellatus</i> complex represent descendants from one or more hybrids between normally parthenogenetic <i>C. tessellatus</i> and gonochoristic <i>C. sexlineatus</i> produced in Colorado (pp. 95-96).
Maslin (1971) {No significant limitations.} ◆ First conclusive demonstration of parthenogenetic reproduction in the <i>C. tessellatus</i> complex (i.e., based on descendants of an individual of triploid pattern class B, which also occurs at Higbee, from 25 miles SE Pueblo, Pueblo County, Colorado) using successive generations of laboratory reared lizards (p. 157).
Parker and Selander (1976) {Absence of precise locality data; all specimens listed from “Vicinity of Higbee” (p. 794). Designation of triploid population at Higbee as pattern class C despite recognition that it is genetically identical to pattern class B at Huerfano Canyon, Pueblo County, Colorado (p. 796).} ◆ Listed EDPFS specimens collected in 1973 at Higbee with diploid and triploid chromosome numbers verified by electrophoresis (p. 794). ◆ First report of a triploid population in the <i>C. tessellatus</i> complex at Higbee (p. 794). ◆ Electrophoretic evidence in support of the <i>C. tigris</i> × <i>C. septemvittatus</i> hybrid origin of <i>C. tessellatus</i> (p. 799). ◆ Electrophoretic evidence in support of the <i>C. tessellatus</i> × <i>C. sexlineatus</i> hybrid origin of the triploid population at Higbee (p. 799). ◆ Suggested a recent origin for the <i>C. tessellatus</i> complex of approximately 200 yr ago (p. 802).
Parker (1979a) {Same as for preceding publication. Also, incorrect speculation that the triploid population at Higbee originated since 1958 (p. 1159).} ◆ Reiteration of all points listed for the preceding publication. ◆ Raised the possibility that “. . . morphological discontinuities among clones of <i>tessellatus</i> reflect differences in niche utilization or in physiological responses to heterogenous climatic conditions” (p. 1159).
Parker (1979b) {Same as for preceding publication. Also, incorrect report that triploid lizards reach a larger snout-vent length than diploid lizards in the <i>C. tessellatus</i> complex (p. 1169).} ◆ Reiteration of all points listed for the preceding publication.

Table 1 (cont'd)

Publication {Limitations} ◆ Major Contribution(s)
Densmore et al. (1985) {Same as recorded for Parker and Selander [1976]. Also, uncertainty was indicated about the ploidy level of lizards from Higbee said to be possibly triploid.} ◆ Length variation and heteroplasmy are frequent in mitochondrial DNA from parthenogenetic and bisexual lizards (genus <i>Cnemidophorus</i>) (p. 689). ◆ Suggested that <i>C. tessellatus</i> was formed by hybridization no more than 10,000 yr ago (p. 704).
Densmore et al. (1989) {Relegation of triploid population at Higbee to pattern class C despite previous recognition that it is genetically identical to pattern class B at Huerfano Canyon, Pueblo County, Colorado (Parker and Selander, 1976).} ◆ Rigorous identification of <i>C. tigris marmoratus</i> as the maternal source of the mtDNA found in all diploid and triploid members of the <i>C. tessellatus</i> complex (p. 950). ◆ Supported the suggestion of Parker and Selander (1976) that the <i>C. tessellatus</i> complex may be of very recent origin (p. 952). ◆ “Overall, no clear correlation can be drawn between the mtDNA and allozyme data sets regarding the absolute number of different hybrids that produced the diploid pattern-classes of <i>C. tessellatus</i>” (p. 953). ◆ Proposed that the pattern class C (= B) triploid population at Higbee resulted from hybridization between a female of <i>C. tessellatus</i> pattern class D and a male of <i>C. sexlineatus</i> (p. 954).
Walker et al. (1990) {Uncertainty about the exact sites of collection of specimens utilized by Parker and Selander (1976).} ◆ Preliminary report that the triploid population at Higbee is genetically (Parker and Selander, 1976) and morphologically indistinguishable from other pattern class B populations in Colorado (p. 391). ◆ Described three tetraploid hybrid males between individuals of triploid pattern class B and males of <i>C. sexlineatus</i> at Higbee (p. 391). ◆ Multivariate analysis of meristic variation in the three parthenogenetic populations and one gonochoristic population at Higbee (p. 395).
Wright (1993) {Same as recorded for Parker and Selander (1976).} ◆ Reiterated opinion that the pattern class C (= B) triploid population at Higbee resulted from hybridization between a female of <i>C. tessellatus</i> pattern class D and a male of <i>C. sexlineatus</i> (p. 56).
Leuck (1993) {No voucher specimens retained and inexact locality data.} ◆ Investigated the effect of ploidy level (i.e., genetic relatedness) on aggressive behavior of sympatric diploid and triploid members of the <i>C. tessellatus</i> complex from Higbee (p. 294). ◆ Provided the impetus for our request of unpublished information (Leuck, unpubl.) which provided the key to understanding the distributional relationships and community assemblages of parthenogenetic <i>Cnemidophorus</i> at Higbee. ◆ Established the presence of diploid and triploid parthenogenetic populations of <i>Cnemidophorus</i> on the north escarpment of Ninemile Valley of the Purgatoire River at Higbee (Leuck, unpubl.).
Paulissen et al. (1993) {No significant limitations.} ◆ Preliminary report of food habits of the <i>Cnemidophorus</i> guild at Higbee.
Walker et al. (1994) {Same as recorded for Parker and Selander (1976).} ◆ Reported a triploid hybrid females between a diploid, normally parthenogenetic individual of <i>C. tessellatus</i> pattern class C and a male of <i>C. sexlineatus</i> (p. 238). ◆ Reported an additional tetraploid hybrid male between a triploid, normally parthenogenetic individual of pattern class B and a male of <i>C. sexlineatus</i> from Higbee (p. 237).

Table 1 (cont'd)

Publication {Limitations} ◆ Major Contribution(s)
Walker et al. (1995) {Same as recorded for Parker and Selander (1976).} ◆ Conclusive evidence that the triploid population at Higbee is genetically (Parker and Selander, 1976) and morphologically indistinguishable from other pattern class B populations in Colorado (p. 655). ◆ Rejection of the hypothesis of Densmore et al. (1989) and Wright (1993) that the triploid population at Higbee resulted from hybridization between a female of <i>C. tessellatus</i> pattern class D female and a male of <i>C. sexlineatus</i> (p. 656). ◆ Detailed characters that distinguish individuals of triploid pattern class B from individuals of diploid <i>C. tessellatus</i> pattern class C at Higbee (p. 654).
Taylor et al. (1996) {No significant limitations.} ◆ Presented evidence that <i>C. tessellatus</i> pattern class D at Higbee and pattern class D in the vicinity of Conchas Lake, San Miguel County, New Mexico, are morphologically distinct, respectively (p. 258). ◆ Suggested a separate origin for Colorado and New Mexico populations of <i>C. tessellatus</i> pattern class D (p. 257).
Walker et al. (1997) {No significant limitations.} ◆ Designated a neotype (AMNH 141903) and type locality (Colorado: Otero County: Higbee, Comanche National Grassland, Vogel Canyon Picnic Area and Trailhead, 22.3 km S La Junta by Colorado Hwy. 109 to road 802, then 2.24 km W, then 2.4 km S to trailhead and picnic area) for diploid <i>Cnemidophorus tessellatus</i> (Say, 1823) and redescribed the species (p. 237). ◆ Discussed distinguishing characters of three pattern classes of <i>C. tessellatus</i>, including pattern classes C and D at Higbee (p. 246). ◆ Allocated triploid pattern classes A, B (represented at Higbee), and C to a new endemic Colorado species, <i>C. neotessellatus</i> (p. 249).
Walker et al. (1998) {Lack of precise locality data for specimens collected by E. D. Parker.} ◆ First published report of differently constituted valley and escarpment assemblages of <i>Cnemidophorus</i> lizards at Higbee. ◆ Briefly described the habitats occupied by whiptail lizards in the Higbee area based on dominant vegetation types. ◆ Presented evidence indicating essentially parapatric microgeographic distribution patterns between diploid <i>C. tessellatus</i> C and diploid <i>C. tessellatus</i> D and between triploid <i>C. neotessellatus</i> B and maternal progenitor <i>C. tessellatus</i> C at Higbee.

Table 2. Collecting results of various workers at six sites at Higbee, Otero County, Colorado. Abbreviations for sites (Walker et al., 1998): H-NV = Higbee–Ninemile Valley; H-SR = Higbee–Simmons Ranch; H-PR = Higbee–Purgatoire River; H-VC = Higbee–Vogel Canyon; H-NE = Higbee–North Escarpment; H-VCT = Higbee–Vogel Canyon Trailhead; B(3n) = *Cnemidophorus neotessellatus* B; C(2n) = *C. tessellatus* C; D(2n) = *C. tessellatus* D; SEX = *C. sexlineatus*; BxS = *C. tessellatus* B × *C. sexlineatus*; CxS = *C. tessellatus* C × *C. sexlineatus*. References = specimens either previously listed or pivotal in publications by (1) Zweifel (1965), (2) Maslin (1966), (3) Parker and Selander (1976), (4-5) Parker (1979a, b), (6-10) Walker et al. (1990, 1994, 1995, 1997, 1998), (11) Leuck (1993), (12) Paulissen et al. (1993), (13) Taylor et al. (1996).

	Area	Date	B(3n)	C(2n)	D(2n)	SEX	BxS	CxS	Collectors	References
Valley Sites	H-NV	7 July 1963	0	2	1	1	0	0	E. Parker	3–5, 6–10, 13
	H-NV	8 August 1975	0	0	0	8	0	0	E. Parker	3–5, 6–10, 13
	H-NV	9 July 1988	0	10	5	9	0	1	Authors	6–10, 12–13
	H-NV	10 July 1988	1	12	4	8	1	0	Authors	6–10, 12–13
	H-NV	11 August 1988	0	17	7	1	0	0	Authors	6–10, 12–13
	H-NV	1 August 1989	0	4	2	1	0	0	Authors	6–10, 12–13
	H-NV	2 September 1989	0	1	0	0	0	0	H. Taylor	6–10, 12–13
	H-NV	3 September 1989	0	7	2	0	0	0	H. Taylor	6–10, 12–13

Table 2 (cont'd)

	Area	Date	B(3n)	C(2n)	D(2n)	SEX	BxS	CxS	Collectors	References
Valley Sites	H-NV	4 September 1989	0	7	3	0	0	0	H. Taylor	6-10, 12-13
	H-NV	15 September 1989	0	0	1	0	0	0	H. Taylor	6-10, 12-13
	H-NV	16 September 1989	1	5	4	0	0	0	H. Taylor	6-10, 12-13
	H-NV	17 September 1989	1	8	2	0	1	0	H. Taylor	6-10, 12-13
	H-NV	4 June 1990	2	7	2	6	0	0	Authors	6-10, 12-13
	H-NV	5 June 1990	2	14	4	3	1	0	Authors	6-10, 12-13
	H-NV	10 August 1990	1	3	0	0	0	0	Authors	6-10, 12-13
	H-NV	13 July 1991	0	0	2	0	0	0	Authors	6-10, 12-13
	H-NV	14 July 1991	1	0	0	4	0	0	Authors	6-10, 12-13
	H-NV	29 May 1993	0	1	0	0	0	0	Authors	6-10, 12-13
	H-NV	Totals	9	98	39	41	3	1		
	H-SR	9 July 1988	0	1	0	0	0	0	Authors	6-10, 12-13
	H-SR	4 June 1990	0	1	0	4	0	0	Authors	6-10, 12-13
	H-SR	Totals	0	2	0	4	0	0		
	H-PR	10 August 1990	0	0	0	3	0	0	Authors	6-10, 12-13
	H-VC	15 September 1949	0	0	1	0	0	0	T. Maslin	1, 10
	H-VC	31 August 1960	2	4	25	0	0	0	T. Maslin	1, 6-10, 13
	H-VC	15 July 1973	9	1	6	1	1	0	E. Parker	3-10, 13
	H-VC	9 July 1988	1	1	0	3	0	0	Authors	6-10, 12-13
	H-VC	4 June 1990	0	0	0	1	0	0	Authors	6-10, 12-13
	H-VC	5 June 1990	0	0	0	1	0	0	Authors	6-10, 12-13
	H-VC	10 June 1993	0	0	0	0	0	0	Authors	10
	H-VC	Totals	12	6	32	6	1	0		
Escarpment Sites	H-NE	6 June 1982	5	0	3	0	0	0	B. Leuck	9-11
	H-NE	7 June 1982	3	0	3	0	0	0	B. Leuck	9-11
	H-NE	8 June 1982	4	0	6	0	0	0	B. Leuck	9-11
	H-NE	29 May 1993	0	0	0	2	0	0	Authors	9-11
	H-NE	Totals	12	0	12	2	0	0		
	H-VCT	8 June 1993	1	0	1	1	0	0	H. Taylor	8-10, 13
	H-VCT	9 June 1993	2	0	4	1	0	0	H. Taylor	8-10, 13
	H-VCT	10 June 1993	2	0	1	1	0	0	H. Taylor	8-10, 13
	H-VCT	30 June 1993	3	0	4	2	0	0	Authors	8-10, 13
	H-VCT	16 August 1993	1	0	1	1	0	0	Authors	8-10, 13
	H-VCT	6 July 1994	1	0	1	0	0	0	Authors	9-10, 13
	H-VCT	7 July 1994	0	0	1	0	0	0	Authors	9-10, 13
	H-VCT	17 August 1994	2	0	1	0	0	0	C. Cohn	10
	H-VCT	18 August 1994	1	0	0	0	0	0	C. Cohn	10
	H-VCT	Totals	13	0	14		0	0		

Not included in either this table or the Appendix are the following specimens in the Los Angeles County Museum (LACM) listed by Densmore et al. (1989) for which dates of collection could not be obtained: *C. neotesselatus* B (LACM 134804, 134805, 134807 from Higbee); *C. tessellatus* D (LACM 128338-128340 from 3.2 km S Higbee on Hwy. 109; LACM 128341-128342 from 5.6 km S Higbee).

There remain many opportunities for research on the unique assemblages of *Cnemidophorus* lizards at Higbee. Comparative life history data (e.g., size and age at maturity, clutch size, number of clutches per activity cycle, longevity) are obviously desirable for *C. tessellatus* C and D, *C. neotessellatus* B, and *C. sexlineatus*. Whether the essentially parapatric microgeographic relationships between *C. tessellatus* C and *C. tessellatus* D and between *C. tessellatus* C and *C. neotessellatus* B, respectively, reflect competitive interactions, habitat preferences, or a combination of competition and habitat factors are also unknown. Notwithstanding the number of biologists who have studied *Cnemidophorus* at Higbee and elsewhere in southeastern Colorado, the distribution of *C. neotessellatus* B and pattern classes C and D of *C. tessellatus* are understood only in broad terms. Much additional work is needed before detailed distribution maps for all of these parthenogenetic forms can be drawn. The obvious vulnerability of populations of parthenogenetic whiptails in Ninemile Valley of the Purgatoire River at Higbee to agricultural activities requires that some action be taken to monitor the status of *Cnemidophorus* assemblages in the valley. Finally, the physiological ecology and ethology of

the three parthenogenetic forms at Higbee are open to investigation.

Acknowledgments

Field research in Colorado was conducted under authority of collecting permits issued to personnel at Louisiana State University–Eunice, Regis University, and University of Arkansas. Assistance in the field was provided by J. M. Walker, Jr., H. L. Taylor, and K. K. Taylor. Several colleagues provided critical input to our studies at Higbee: B. E. Leuck (comments, field notes, and photographs), Centenary College; E. D. Parker, Jr. (field notes and locality data), then at McNeese State University; J. W. Wright (locality data), Los Angeles County Museum; S.-K. Wu (T. P. Maslin's field notes), University of Colorado Museum; C. C. Cohn (photographs and locality data), University of Arkansas; C. J. Cole (comments), American Museum of Natural History; and H. L. Taylor (locality data), Regis University, Denver. We examined specimens loaned by E. D. Parker, Jr., S.-K. Wu, and H. L. Taylor. E. B. Smith, University of Arkansas, assisted in plant identifications and made available plant specimens in the herbarium.

Appendix

Specimens of *Cnemidophorus* collected from in and around Ninemile Valley of the Purgatoire River at Higbee, Otero County, Colorado, for which exact locality data and dates of collection are available. Names of sites are those used by Walker et al. (1998). Abbreviations: AMNH (American Museum of Natural History); UCM (University of Colorado Museum); UADZ (University of Arkansas Department of Zoology); EDPFS (E. D. Parker, Jr. Field Series).

Cnemidophorus sexlineatus (n = 62)

(H-VCT) Higbee–Vogel Canyon Trailhead, Colorado (n = 6)

Colorado: Otero County: Higbee, Comanche National Grassland, Vogel Canyon Picnic Area and Trailhead, 22.3 km S La Junta by Colorado Hwy. 109 to road 802, then 2.24 km W, then 2.4 km S to trailhead and picnic area [8 June 1993 (UCM 57189; n = 1); 9 June 1993 (UCM 57190; n = 1); 10 June 1993 (UCM 57191; n = 1); 30 June 1993 (UADZ 5010, 5011; n = 2); 16 August 1993 (UADZ 5150; n = 1)].

(H-NE) Higbee–North Escarpment, Colorado (n = 2)

Colorado: Otero County: Higbee, on north escarpment at jct. of Colorado Hwy. 109 and road 804 [29 May 1993 (UADZ 5001, 5002; n = 2)].

(H-VC) Higbee–Vogel Canyon, Colorado (n = 6)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, vicinity of entrance to Vogel Canyon, 4.3 km SW of Colorado Hwy. 109 on road 804 [9 July 1988 (UADZ 3148, 3152, 3153; n = 3); 4 June 1990 (UADZ 4079; n = 1); 5 June 1990 (UADZ 4127; n = 1); probable origin of part of sample listed as “Vicinity of Higbee” by Parker and Selander (1976) and the sample listed as “Vicinity of Higbee Community” by Parker (unpubl.) collected 15 July 1973 (EDPFS 51; n = 1)].

(H-SR) Higbee–Simmon's Ranch, Colorado (n = 4)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 8.6 to 9.0 km SW Colorado Hwy. 109 on road 804 [4 June 1990 (UADZ 4077, 4078, 4081, 4084; n = 4)]. This site was listed as Higbee–Ninemile Valley Site 1, Colorado by Walker et al. (1997).

(H-NV) Higbee–Ninemile Valley, Colorado (n = 41)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 11.5–12.5 km SW Colorado Hwy. 109 on road 804 [9 July 1988 (UADZ 3154, 3157, 3158, 3163–3165, 3169, 3171, 3172; n = 9); 10 July 1988 (UADZ 3179–3181, 3190, 3191, 3197, 3200, 3201; n = 8); 11 August 1988 (UADZ 3431; n = 1); 1 August 1989 (UADZ 3716; n = 1); 4 June 1990 (UADZ 4082, 4085–4087; n = 4); 5 June 1990 (UADZ 4124–4126; n = 3); 14 July 1991; (UADZ 4486–4488, UCM 57188; n = 4); probable origin of part of sample listed as “Vicinity of Higbee” by Parker and Selander (1976) and the sample listed as “Ninemile Valley of the Purgatoire River” by Parker (unpubl.) collected 15 July 1973 (EDPFS 663–670; n = 8) and 12 August 1973 (EDPFS 662; n = 1)]. This site was listed as Higbee, Ninemile Valley Site 2, Colorado by Walker et al. (1997).

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 13.4 km SW Colorado Hwy. 109 on road 804 [4 June 1990 (UADZ 4080, 4083; n = 2)].

(H-PR) Higbee-Purgatoire River, Colorado (n = 3)

Colorado: Otero County: Higbee, Colorado Hwy. 109 bridge across Purgatoire River near historic townsite marker [10 August 1990 (UADZ 4326-4328; n = 3)].

***Cnemidophorus neotesselatus* B(3n) (n = 47)**

(H-VCT) Higbee-Vogel Canyon Trailhead, Colorado (n = 13)

Colorado: Otero County: Comanche National Grassland, Vogel Canyon Picnic Area and Trailhead, 22.3 km S La Junta by Colorado Hwy. 109 to road 802, then 2.24 km W, then 2.4 km S to trailhead and picnic area [8 June 1993 (UCM 57214; n = 1); 9 June 1993 (UCM 57215, 57216; n = 2); 10 June 1993 (UCM 57217, 57218; n = 2); 30 June 1993 (UADZ 5007-5009; n = 3); 16 August 1993 (UADZ 5149; n = 1); 6 July 1994 (UADZ 5406; n = 1); 17 August 1994 (determinations based on photographs provided by C. C. Cohn; n = 2); 18 August 1994 (determination based on photograph provided by C. C. Cohn; n = 1)].

(H-NE) Higbee-North Escarpment, Colorado (n = 12)

Colorado: Otero County: Higbee, on north escarpment at jct. of Colorado Hwy. 109 and road 804 [6 June 1982 (probable identity of lizards used experimentally and not retained by B. E. Leuck; n = 5); 7 June 1982 (probable identity of lizards used experimentally and not retained by B. E. Leuck; n = 3); 8 June 1982 (probable identity of lizards used experimentally and not retained by B. E. Leuck; n = 4)].

(H-VC) Higbee-Vogel Canyon, Colorado (n = 13)

Colorado: Otero County: Higbee, near ruins of Higbee School, 2.7 km SW of Colorado Hwy. 109 on road 804 [14 August 1960 (UCM 17336; n = 1)].

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 1.6 km S Higbee School (= vicinity of the entrance to Vogel Canyon, 4.3 km SW Colorado Hwy. 109) on road 804 [31 August 1960 (UCM 14849, 14852; n = 2)].

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, entrance to Vogel Canyon 4.3 km SW Colorado Hwy. on road 804 [9 July 1988 (UADZ 3151, n = 1)].

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, vicinity of the entrance to Vogel Canyon, 4.3 km SW Colorado Hwy. 109 on road 804 [probable origin of sample listed as "Vicinity of Higbee" by Parker and Selander (1976) and "Vicinity of Higbee Community" by Parker (unpubl.) collected 15 July 1973 (UADZ 3927-3935 = EDPFS 35-37, 43-46, 48, 50; n = 9)].

(H-NV) Higbee-Ninemile Valley, Colorado (n = 9)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 11.5-12.0 km SW Colorado Hwy. 109 on road 804 [10 July 1988 (UADZ 3183; n = 1) 16 September 1989 (UCM 56137; n = 1); 17 September 1989 (UCM 56147; n = 1); 4 June 1990 (UADZ 4095, 4096; n = 2); 5 June 1990 (UADZ 4120, 4121; n = 2); 10 August 1990 (UADZ 4322; n = 1); 14 July 1991 (UCM 57213; n = 1)].

***Cnemidophorus neotesselatus* B(3n) × *Cnemidophorus sexlineatus* (n = 4)**

(H-VC) Higbee-Vogel Canyon, Colorado (n = 1)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, vicinity of entrance to Vogel Canyon 4.3 km SW of Colorado Hwy. 109 on road 804 [probable origin of sample listed as "Vicinity Higbee" by Parker and Selander (1976) and "Vicinity of Higbee community" by Parker (unpubl.) collected 15 July 1973 (UADZ 3926 = EDPFS 49; n = 1)]. Specimen previously thought to have originated at Higbee, Ninemile Valley of the Purgatoire River, 11.5-12.0 km SW Colorado Hwy 109 on road 804 by Walker et al. (1990).

(H-NV) Higbee-Ninemile Valley, Colorado (n = 3)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 11.5-12.0 km SW Colorado Hwy. 109 on road 804 [10 July 1988 (UADZ 3196; n = 1); 17 September 1989 (UCM 56158; n = 1); 5 June 1990 (UADZ 4115; n = 1)].

***Cnemidophorus tessellatus* C(2n) (n = 107)**

(H-VC) Higbee-Vogel Canyon, Colorado (n = 8)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 1.6 km S Higbee School (= vicinity of entrance to Vogel Canyon, 4.3 km SW Colorado Hwy. 109) on road 804 [31 August 1960 (UCM 14835, 14838, 14854, 14860; n = 4)].

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, vicinity of entrance to Vogel Canyon, 4.3 km SW of Colorado Hwy. 109 on road 804 [9 July 1988 (UADZ 3168; n = 1); probable origin of sample listed as "Vicinity of Higbee" by Parker and Selander (1976) and "Vicinity of Higbee Community" by Parker (unpubl.) collected 15 July 1973 (UADZ 3936 = EDPFS 47; n = 1)].

(H-SR) Higbee-Simmons Ranch, Colorado (n = 2)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 8.6–9.0 km SW of Colorado Hwy. 109 on road 804 [9 July 1988 (UADZ 3147; n = 1); 4 June 1990 (UADZ 4091; n = 1)]. This site was listed as Higbee-Ninemile Valley Site 1 by Walker et al. (1997).

(H-NV) Higbee-Ninemile Valley, Colorado (n = 97)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 11.5–13.0 km SW of Colorado Hwy. 109 on road 804 [9 July 1988 (UADZ 3150, 3155, 3156, 3159, 3160, 3167, 3170, 3174, 3176; n = 9; 10 July 1988 (UADZ 3182, 3184, 3185, 3187, 3188, 3193–3195, 3198, 3199, 3203, 3204; n = 12); 11 August 1988 (UADZ 3409–3412, 3414–3423, 3426–3428; n = 17); 1 August 1989 (UADZ 3710–3713; n = 4); 2 September 1989 (UCM 56116; n = 1); 3 September 1989 (UCM 56117–56123; n = 7); 4 September 1989 (UCM 56126–56132; n = 7); 16 September 1989 (UCM 56138–56142; n = 5); 17 September 1989 (UCM 56148–56155; n = 8); 4 June 1990 (UADZ 4088–4090, 4092–4094, 4097; n = 7); 5 June 1990 (UADZ 4104–4106, 4108, 4109, 4111–4113, 4115–4119, 4122; n = 14); 10 August 1990 (UADZ 4323–4325; n = 3); 29 May 1993 (UADZ 5000; n = 1); probable origin of part of sample listed as “Vicinity of Higbee” by Parker and Selander (1973) and sample listed as “Ninemile Valley of the Purgatoire” by Parker (unpubl.) collected 12 August 1973 (UADZ 3937, 3938 = EDPFS 659, 660; n = 2)]. This site was listed as Higbee-Ninemile Valley Site 2 by Walker et al. (1997).

***Cnemidophorus tessellatus* C(2n) × *Cnemidophorus sexlineatus* (n = 1)**

(H-NV) Higbee-Ninemile Valley, Colorado (n = 1)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 11.5–12.5 km SW of Colorado Hwy. 109 on road 804 [9 July 1988 (UADZ 3173; n = 1)]. This site was listed as Higbee-Ninemile Valley Site 2 by Walker et al. (1997).

***Cnemidophorus tessellatus* D(2n) (n = 96)**

(H-VCT) Higbee-Vogel Canyon Trailhead, Colorado (n = 14)

Colorado: Otero County: Comanche National Grassland, Vogel Canyon Picnic Area and Trailhead, 22.3 km S La Junta by Colorado Hwy. 109 to road 802, then 2.24 km W, then 2.4 km S to trailhead and picnic area [8 June 1993 (UCM 57219; n = 1); 9 June 1993 (UCM 57220–57223; n = 4); 10 June 1993 (UCM 57224; n = 1); 30 June 1993 (UADZ 5003–5006; n = 4); 16 August 1993 (neotype AMNH 141903 = UADZ 5148 prior to 18 January 1996; n = 1); 6 July 1994 (UADZ 5574; n = 1); 7 July 1994 (UADZ 5575; n = 1); 17 August 1994 (determination based on photograph provided by C. C. Cohn; n = 1)].

(H-NE) Higbee-North Escarpment, Colorado (n = 12)

Colorado: Otero County: Higbee, on top of north escarpment at turn off Colorado Hwy. 109 onto road 804 [6 June 1982 (used experimentally and not retained by B. E. Leuck; n = 3); 7 June 1982 (used experimentally and not retained by B. E. Leuck; n = 3); 8 June 1982 (used experimentally and not retained by B. E. Leuck; n = 6)].

(H-VC) Higbee-Vogel Canyon, Colorado (n = 31)

Colorado: Otero County: 1.6 km S Higbee [15 September 1949 (UCM 4956, n = 1) Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 1.6 km S of Higbee School (= vicinity of the entrance to Vogel Canyon, 4.3 km SW of Colorado Hwy. 109) on road 804 [31 August 1960 (UCM 14830–14834, 14836, 14837, 14842–14848, 14850, 14851, 14853, 14855–14859; n = 22)].

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 3.2 km S of Higbee School (= 6.0 km SW of Colorado Hwy. 109) on road 804 [31 August 1960 (UCM 14839–14841; n = 3)].

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, vicinity of the entrance to Vogel Canyon, 4.3 km SW of Colorado Hwy. 109 on road 804 [probable origin of part of sample listed as “Vicinity of Higbee” by Parker and Selander (1976) and sample listed as “Vicinity of Higbee Community” by Parker (unpubl.) collected 15 July 1973 (UADZ 4330–4335 = EDPFS 34, 38–42; n = 6)].

(H-NV) Higbee-Ninemile Valley, Colorado (n = 39)

Colorado: Otero County: Higbee, Ninemile Valley of the Purgatoire River, 12.0–13.0 km SW Colorado Hwy. 109 on road 804 [9 July 1988 (UADZ 3149, 3161, 3162, 3166, 3175; n = 5); 10 July 1988 (UADZ 3186, 3189, 3202, 3205; n = 4); 11 August 1988 (UADZ 3407, 3408, 3413, 3424, 3425, 3429, 3430; n = 7); 1 August 1989 (UADZ 3714, 3715; n = 2); 3 September 1989 (UCM 56124, 56125; n = 2); 4 September 1989 (UCM 56133–56135; n = 3); 15 September 1989 (UCM 56136; n = 1); 16 September 1989 (UCM 56143–56146; n = 4); 17 September 1989 (UCM 56156, 56157; n = 2); 4 June 1990 (UADZ 4098, 4099; n = 2); 5 June 1990 (UADZ 4102, 4103, 4107, 4110; n = 4); 13 July 1991 (previously reported as 7 July 1991 by Walker et al., 1997) (UADZ 4483, 4484; n = 2); probable origin of part of sample listed as “Vicinity of Higbee” by Parker and Selander (1976) and sample listed as “Ninemile Valley of the Purgatoire River” by Parker (unpubl.) collected 12 August 1973 (UADZ 4336 = EDPFS 661; n = 1)].

Literature Cited

- Densmore, L. D., J. W. Wright and W. M. Brown. 1985. Length variation and heteroplasmy are frequent in mitochondrial DNA from parthenogenetic and bisexual lizards (genus *Cnemidophorus*). *Genetics* 110:689-707.
- Densmore, L. D., J. W. Wright and W. M. Brown. 1989. Mitochondrial-DNA analyses and the origin and relative age of parthenogenetic lizards (genus *Cnemidophorus*). II. *C. neomexicanus* and the *C. tessellatus* complex. *Evolution* 43:943-957.
- Leuck, B. E. 1993. The effect of genetic relatedness on social behavior in the parthenogenetic whiptail lizard, *Cnemidophorus tessellatus*. Pp. 293-317. In: J. W. Wright and L. J. Vitt, editors, *Biology of whiptail lizards (genus Cnemidophorus)*. Norman, OK: Oklahoma Museum of Natural History.
- Maslin, T. P. 1950. Herpetological notes and records from Colorado. *Herpetologica* 6:89-96.
- . 1959. An annotated check list of the amphibians and reptiles of Colorado. Univ. Colorado Stud. Ser. in Biol. 6:1-98.
- . 1962. All-female species of the lizard genus *Cnemidophorus*, Teiidae. *Science* 135:212-213.
- . 1966. The sex of hatchlings of five apparently unisexual species of whiptail lizards (*Cnemidophorus*, Teiidae). *Amer. Midl. Nat.* 76:369-378.
- . 1971. Conclusive evidence of parthenogenesis in three species of *Cnemidophorus* (Teiidae). *Copeia* 1971:156-158.
- Parker, E. D., Jr. 1979a. Phenotypic consequences of parthenogenesis in *Cnemidophorus* lizards: I. Variability in parthenogenetic and sexual populations. *Evolution* 33:1150-1166.
- . 1979b. Phenotypic consequences of parthenogenesis in *Cnemidophorus* lizards: I. Similarity of *C. tessellatus* to its sexual parental species. *Evolution* 33:1167-1179.
- Parker, E. D., Jr., and R. K. Selander. 1976. The organization of genetic diversity in the parthenogenetic lizard *Cnemidophorus tessellatus*. *Genetics* 84:791-805.
- Paulissen, M. A., J. M. Walker, J. E. Cordes and H. L. Taylor. 1993. Diet of diploid and triploid populations of parthenogenetic whiptail lizards of the *Cnemidophorus tessellatus* complex (Teiidae) in southeastern Colorado. *Southwest. Nat.* 38:377-381.
- Taylor, H. L., J. M. Walker and J. E. Cordes. 1996. Systematic implications of morphologically distinct populations of parthenogenetic whiptail lizards: *Cnemidophorus tessellatus* pattern class D. *Herpetologica* 52:254-262.
- Walker, J. M., E. D. Parker, Jr., H. L. Taylor, J. E. Cordes and R. M. Abuhteba. 1990. Hybridization between all-female *Cnemidophorus tessellatus* and gonochoristic *Cnemidophorus sexlineatus*. *J. Herpetology* 24:388-396.
- Walker, J. M., J. E. Cordes and H. L. Taylor. 1997. Parthenogenetic *Cnemidophorus tessellatus* complex (Sauria: Teiidae): a neotype for diploid *C. tessellatus* (Say, 1823), redescription of the taxon, and description of a new triploid species. *Herpetologica* 53:233-259.
- Walker, J. M., H. L. Taylor and J. E. Cordes. 1994. Hybrid *Cnemidophorus* (Sauria: Teiidae) in Ninemile Valley of the Purgatoire River, Colorado. *Southwest. Nat.* 39:235-240.
- Walker, J. M., H. L. Taylor and J. E. Cordes. 1995. Parthenogenetic *Cnemidophorus tessellatus* complex at Higbee, Colorado: Resolution of 30 years of controversy. *Copeia* 1995:650-658.
- Walker, J. M., H. L. Taylor, J. E. Cordes and M. A. Paulissen. 1998. Distributional relationships and community assemblage of three members of the parthenogenetic *Cnemidophorus tessellatus* complex and *Cnemidophorus sexlineatus* (Squamata: Teiidae) at Higbee, Otero, County, Colorado. *Herpetological Nat. Hist.* In press.
- Wright, J. W. 1993. Evolution of the lizards of the genus *Cnemidophorus*. Pp. 29-81. In: J. W. Wright and L. J. Vitt, editors, *Biology of whiptail lizards (genus Cnemidophorus)*. Norman, OK: Oklahoma Museum of Natural History.
- Wright, J. W., and C. H. Lowe. 1967. Evolution of the allopolyploid parthenospecies *Cnemidophorus tessellatus* (Say). *Mammalian Chromosome Newsletter* 8:95-96.
- Zweifel, R. G. 1965. Variation in and distribution of the unisexual lizard, *Cnemidophorus tessellatus*. *Amer. Mus. Novitat.* 2235:1-49.

HerPET-POURRI

by Ellin Beltz

Spring Snake Stories

- An unidentified resident of South Dade, Florida, was bitten by a black mamba and taken to the emergency room by ambulance. Bill and Nancy Haast were contacted by the poison control center, but had no black mamba antivenin. They called a private collector who quickly sent nine vials of anti-venin. Haast said, "I heard that the man did not receive a very serious bite, that perhaps it was only one fang." [*Miami Herald*, March 14, 1998, from Alan Rigerman] The average cost of medical treatment for a venomous snakebite is \$11,000.
- Researchers videotaped rattlesnakes striking and found that the snakes struck perfectly on target in 20 of 21 attempts. In addition to heat sensing, it appears that the snakes use touch. Slow motion analysis of the tapes showed that the rattlesnakes modified the position of their fangs after first touching the prey item. [*Science News*, March 14, 1998, from Mark Witwer]
- Little Rock, Arkansas, fire fighters used a metal bar to pry open the mouth of an 8-foot-long Burmese python that tried to swallow its owner's hand in a feeding accident. The 23-year-old man told police he was getting ready to feed the snake a rabbit, but put the rabbit down to move the snake when he was struck. The python then coiled around his arm and began to squeeze. {*Finally enlightenment among the authorities! E*} The fire fighters put the snake back in its cage and it ate the rabbit. [Little Rock *Democrat-Gazette*, January 1, 1998, from Bill Burnett]
- *China Daily* reports: "In a cave near a village named Reacaoka (Kangba Plateau in Sichuan Province), snakes are frequently seen crawling out from the cracks in the cave. Some of them even slide into the spring to swim with the local people. It is said that these snakes will not hurt good people, attacking only those who are evil." [February 28, 1998, from P. L. Beltz]
- "[Sundance], a male golden retriever recently killed a ball python in the area of the backyard where [a 2½-year-old child] of Medford, New York, plays. At first Sundance tried to get [the family's] attention by barking through the window, but they ignored him. . . . [They] later found the dead python in the yard and realized that Sundance had been trying to warn them of the snake." [*Suffolk Life*, February 11, 1998] Contributor Joe Janssen writes: "Practically in my own backyard! Although the evidence of Sundance the Savior seems pretty circumstantial."

Where the laws come from . . .

Teenagers reportedly got "a thrill" taking exotic pet snakes and iguanas out in public. Fed up with complaints from people in malls, schools, churches and even the town hall, the San Juan (Manilla), Philippines, town council unanimously passed a law banning residents from taking exotic animals out in public. They stopped short of an outright ban because some of the councilors have exotic pets at home. [*South China Morning Post*, November 28, 1997, from P. L. Beltz]

Not wandering Indiana

The Indiana Department of Natural Resources banned the purchase, sale, barter or trade of 100 species of reptiles and amphibians in response to complaints from police, fire and other safety agencies. The authorities claim that they and the public need better protection from dangerous snakes. One case involved a man selling a cobra to a 12-year-old. Three venomous snakes escaped in Indianapolis; three Burmese pythons vanished in Monroe County; and a police officer found a 7-foot boa in the road in Fort Wayne. A newly formed local herpetological society plans to petition the agency to reconsider the rules which they consider too restrictive for captive breeders. [Porter County *Post-Tribune*, January 11, 1998, from Jack Schoenfelder]

Easter "Ribbets" 1998

- Frog calls <www.oit.itd.umich.edu:80/bio108/Chordata/Lissamphibia/frog_calls.html> [*Popular Science*, December 1997, from Mark Witwer]
- *FROGLOG*, the newsletter of the Declining Amphibian Populations Task Force <acs-info.open.ac.uk/info/newsletters/froglog.html> . Incidentally, DAPTF car or window stickers (\$2 US) and sew-on patches (\$5 US) post-paid. Order from: John W. Wilkinson, Department of Biology, The Open University, Walton Hall, Milton Keynes, MK7 6AA, United Kingdom.
- Abstracts of the Declining Amphibian/Deformed Amphibian conference March 20–21, 1998, at the Milwaukee Public Museum <www.mpm.edu/collect/vertzo/herp/daptf/Midwest.html> .
- North American Amphibian Monitoring Program <www.im.nbs.gov/amphibs.html> .
- North American Reporting Center for Amphibian Malformations <www.npsc.nbs.gov/narcam> . Telephone (800) 238-9801. [*National Wildlife*, February/March 1998, from Mark Witwer]
- New terrestrial salamander monitoring program site <www.im.nbs.gov/sally/> or E-mail coordinator Dan Lantz <Dlantz@minn.net> .
- Register for the symposium on Amphibians and Reptiles of Tropical Forests, in Hanoi, Vietnam, June 1999, by E-mailing the coordinator, Professor Cao Van Sung <sung@iebr.ac.vn> .
- Deformed amphibian conference proceedings <www.im.nbs.gov/naamp3/naamp3.html> .
- Interactive Frog Dissection Site <teach.virginia.edu/go/frog/menu.html> .
- Researchers analyzing new county records for North American amphibians noted that some species are moving northward in response to gradually warming temperatures. [*FROGLOG*, January 1998, from John Wilkinson]

- Wood frogs were reintroduced into Cunningham Park, Queens, New York City, New York. They are part of the “Project X” experiment, an attempt to restore plants and animals once native to New York which have disappeared. Most of the translocations have been plants, but box turtles were moved into Staten Island’s High Rock Park, although they aren’t breeding. Over 1,000 Fowler’s toad eggs were released in Canarsie Park, but no one has seen a toad yet. [*Miami Herald*, January 4, 1998, from Alan Rigerman]
- “In September in Cormierville, New Brunswick, [a man] peeled an orange and an inch-long, orange Pacific tree frog leaped out. A local zoo official said the frog must have entered the orange through a tiny hole and then survived on the juices.” [*Chicago Reader*, January 16, 1998, from Ray Boldt]
- Thinning ozone is blamed for the death of embryos of high altitude long-toed salamanders in mountain lakes in the Cascades in Oregon. Eggs shielded from UV developed normally [*New Orleans Times-Picayune*, December 9, 1997, from Ernie Liner]
- A tourist to Isla de Ometepe, Nicaragua, reported seeing numerous dead frogs lying on the shore of a crater lake. There are two volcanos associated with the site. [*FROGLOG*, November 1997, from John Wilkinson]
- *A Field Guide to Australian Frogs* by John Barker, Gordon Grigg and Michael Tyler “has been designed for use by both amateur and professional naturalist, and by students at all levels, . . . an asset on any naturalist’s bookshelf,” according to Surrey Beatty & Sons, Australian natural history publishers. <surreybeatty@iform.com.au>.
- Mountain yellow-legged frogs have had a rapid decline since the 1970s when they were relatively abundant in the Sierra Nevada Mountains in California. Researchers have found that state-sponsored trout-stocking programs may be responsible, for in ponds with fish there are no frogs and vice-versa. A California Department of Fish and Game fish biologist said that he plans to use this new data to “modify the agency’s fish stocking program in the region,” according to *National Wildlife*. [February-March 1998, from Ray Boldt]
- A series of deformed frogs from a lake in Minnesota examined by researchers from the University of California-Irving have a particular series of extra legs and other characters. The deformities are consistent with those seen in other vertebrates deliberately exposed to retinoic acid in experiments during development. Retinoids are vitamin A compounds. Excess amounts of retinoic acid have been shown to produce birth defects in humans. The work was presented at the DAPTF/Declining Amphibian conference in Milwaukee. [*Chicago Tribune*, March 17, 1998, from Claus Sutor]
- The Frogeye Car Company will begin production on a new series of the Frogeye Supersprite. The new Frogeyes will comply with emission requirements, but otherwise look like the popular sportscars, made between 1958 and 1961. The company has made 25 cars so far, all for export to Japan, where they sell for 25,000 pounds. [*Financial Times*, July 27, 1997 from P. L. Beltz]

- The *Financial Times* reports: “. . . Compassion in World Farming staged a graphic demonstration in London’s Trafalgar Square against the growing trade in frogs’ legs. The organization said the 16 tons of legs sold in Britain each year would require the slaughter of 1 million frogs. Its action mirrored a similar protest in Paris by Protection Mondiale de l’Animal de Ferme.” There’s times I wish we could reproduce photos and this one is the best so far. The picture shows three guys in wet suits, masks and flippers (all brightly colored) with protest signs that read, “Say `Non’ to Frogs’ Legs . . . CIWF.” The photo catches the men in motion. One is crouched like a frog, the other two are in the process of hopping up and down! [*Financial Times*, December 10, 1997, from P. L. Beltz]

Volunteers needed

Do you like frogs? Like to drive around slowly on back roads at night with the windows down? If so, Chris Phillips of the Illinois Natural History Survey wants you for frog surveying! Contact him at 607 E. Peabody Drive, Champaign, IL 61820 telephone (217) 244-7077.

Landscaping ideas

A columnist with the *Chester County Living* insert in the *Daily Local News* described how he puts out boards and metal in his yard to see the amphibians and reptiles that live in his subdivision. Scott Shalaway wrote “Backyard habitat improvements to encourage snakes, toads and salamanders are probably not for everyone, but if you’re so inclined, you now know what to do with those scraps of plywood and sheet metal cluttering the garage.” For full details write him at R.D. 5, Cameron, WV 26033, or E-mail <shalaway@aol.com>. Incidentally, his wife thinks he’s weird.

Thanks to the contributors!

Michael W. Klemens, Director of the Turtle Recovery Program of the Wildlife Conservation Society, Bronx, New York, sent a copy of their newest Turtle Recovery Program. They’ve had some successes and some setbacks, but the part I really enjoyed was reading the names of the 1997 donors. It’s a real who’s who of turtles and you can help, too. Write TRP-WCS, 2300 Southern Boulevard, Bronx, NY 10460-1099; call (718) 220-5100 or by web <www.wcs.org>.

News of the truly weird

- Researchers installed temperature-sensing radio-tracking devices in Gila monsters and have learned a lot more than they expected. Some of the surprises include the distance the animals move, the number of shelters they occupy, that each fork of the tongue gets independent scent reception used for navigation and that the Gila’s venom is for defense against coyotes, hawks, and owls and is not injected into food items. Gila monsters have an unusually low metabolic rate, but oxygen consumption can zoom to produce highly active aerobic mating behavior. “The scientists retrofitted a motorized treadmill with a cardboard enclosure designed to measure the creatures’ oxygen intake,” reports *National Wildlife*. [February/March 1998, from Ray Boldt]

- *Science News* ran a feature on tuatara, the only members of the order Rhynchocephalia to survive whatever killed all their immediate relatives and the dinosaurs. Tuatara have been protected since 1895 in New Zealand where they had gone extinct on the mainland in the middle of that century. In this century it has been learned that the animals mature after 15 years, mate cloaca to cloaca like birds, then the female takes about 8 months to shell the dozen or so eggs. Incubation takes another 12 to 15 months. Tuatara moms need four years to recharge from a mating, but all the adults may live to 100 years old or more on this slow and poky lifestyle. Tuatara have been reintroduced to islands where they had been driven to extinction by introduced rats. They are hard to find, being totally nocturnal; the growth in refound individuals shows that they are thriving. [November 8, 1997, from Mark Witwer]

Save the Salamanders, Round II

Two scientists claim that pool-maintenance procedures at the Barton Springs attraction are killing endangered salamanders in violation of federal law. They filed formal notices of intent to sue the City of Austin and the Federal Interior Department under the Endangered Species act. The videotape they released showed a salamander perched on a rocky section of the pool, isolated by falling waters during “routine” pool maintenance. More than two dozen salamanders died last year when a spring adjacent to the pool dried up while water levels were lowered in the swimming area for cleaning. Since the city has only filed for an incidental take permit, and not obtained it, the scientists claim that the city is in violation of the Endangered Species Act. However, a lawyer for the Save Our Springs Alliance said that the worst threat to the species is development in the 354-square-mile watershed of Barton Springs. [*Austin American-Statesman*, January 21, 1998, from William B. Montgomery]

And the toads, too

The Lone Star Chapter of the Sierra Club and the Southwest Center for Biodiversity gave Texas Parks and Wildlife, the National Park Service and the Secretary of the Interior notice of intent to sue under the Endangered Species Act on behalf of the Houston toad. Apparently federal funds are being used to build nine more holes on a golf course in Houston Toad habitat. The settlement reached to expand the golf course included acquisition of mitigation habitat by August, 1997 and that has not yet occurred. [*Elgin Courier*, Texas, February 4, 1998, from William B. Montgomery]

Home sweet home

“My cat was not sad to see ‘Snappy’ [a much-too-large pet snapper] go back to the exact place where he hatched on the Fox River. She had lost part of an ear a few years ago when she got too curious and tried to investigate his tank. My dogs were smarter; when I let him walk the kitchen floor for exercise, they followed him as a group (safety in numbers?) from a respectable distance of three feet. Perhaps the cat told them something? I’m sure Snappy is buried deep in the mud now waiting for the first warm days of Spring to emerge and terrorize his immediate neighborhood!” Margo Milde

Do unto shippers?

The Caymanian Compass reports “Willemstad, Curacao – Hundreds of tropical lizards suffocated in cardboard boxes without ventilation on a flight from the Caribbean Dutch island of Bonaire to Amsterdam, KLM Dutch airlines said. . . . The airline . . . halted shipments of unaccompanied animals from Bonaire while it investigates. . . . Eight hundred lizards arrived dead at Amsterdam’s Schipol Airport . . . after a nine-hour flight. . . . It was not the first time the lizards . . . had been exported . . . to Amsterdam, but it was the largest shipment yet. . . . [A] local government official . . . said the reptiles were not protected and no export license was required.” [February 13, 1998, from L. W. Reed]

Herp Watchers Wanted

Earthwatch Institute has the following opportunities for herpetological volunteers who also pay a share of expedition costs and transport: (1) Radio-track and census desert tortoises in Joshua Tree National Park in southern California; (2) Monitor nesting and success of leatherback sea turtles in the Virgin Islands; (3) Study population dynamics of bug-eating lizards on an island in the Gulf of California; and/or (4) Monitor loggerhead sea turtles in Baja California. For more information call (800) 776-0188, or visit the website <www.earthwatch.org>.

Mikey does not like it

“[The] Argentine ant is forcing a dramatic change in the diet of the horned lizard, once common but now declining in Southern California. . . . Researchers studied lizards both in the lab and in the field. They offered caged lizards a choice of native or Argentine ants . . . [which] are either unappetizing or too small to be worth much effort. . . . Horned lizards always prefer native ants over exotic ants. . . .” Horned lizards switch to beetles if Argentine ants displace native ants. [*Science News*, August 23, 1997, from Mark Witwer]

Thanks to everyone who contributed this month and to

R. G. Schmitt, Frederic Frye, Ray Boldt, Dreux Watermolen, Bill Burnett, Karen Furnweger, Jack Schoenfelder, Mark Witwer, Joseph Jannsen, Garret Kazmierski, and Ardis Allen for repeats and other stuff. You can contribute, too. Take whole sheets of newspapers/magazines with herp stories, or cut out the clippings being sure to attach the date/publication slug and your name to each page. Fold a minimum number of times and please, no staples! Send to: Ellin Beltz, 1647 N. Clybourn Avenue, Chicago, IL 60614-5507. If you’ve been sitting on stuff, this would be a good time to send it in as the file folder is extremely skinny right now!

Currently Happening Stuff

reported by Gary Kostka

Don't Tread on Me . . .

Gerry Salmon, a New York State trooper by trade, has a passion for snakes. When not in the course of upholding its laws, Gerry finds time to serve the state of New York in a herpetological capacity, working with the Department of Environmental Conservation's Rattlesnake Recovery Team. His beautiful slides and informative narrative enabled those attending the February 25 general meeting of the Chicago Herpetological Society to experience the thrill of a late spring visit to a rattlesnake den in Connecticut. His presentation also included an overview of the natural history of the timber rattlesnake and its past and present status in New England.

The New England states comprise the most northern portion of the timber rattlesnake's range. The prevailing cool climatic conditions of the region allow the snakes an active season averaging only 4.3 months in length. This period which runs from late April through September affords them just enough time to emerge from hibernation, feed, grow and reproduce, before the onset of cooler weather compels them to return to their dens. They spend the next 7-8 months within their dens and do not venture outside until the next spring.

The den site described in Gerry's presentation was on Mine Mountain, located in the extreme northwestern corner of Connecticut near the town of Sharon. Not so much a mountain as a hill on steroids, it rises to an elevation of 1,840 feet and is part of a range of mountains of similar size known as the Berkshires. Its slopes are mostly covered by deciduous forest which give way to an open meadow near the summit. Interspersed throughout the meadow are numerous rock outcroppings and jumbled piles of fragmented rock. This elevated rocky terrain with its sunlit exposures is typical of the den sites favored by Northeastern timber rattlers, being well suited to their thermoregulatory needs.

Gerry's slides depicted a number of rattlers caught in the act of soaking up the late May sunshine. Some were in full view and could easily be seen, while others remained partially concealed within their rock crevice retreats, with only a coil or two exposed to the sun's warming rays. The colors of the timber rattlers at the Mine Mountain den site were somewhat muted, dulled by a muddy wash acquired in the damp environs of their den crevices where the snakes still sheltered.

Gerry explained that the snakes begin emerging from hibernation in mid- to late April for brief periods on only the warmer days. They stay within close proximity of the den site from late spring through midsummer, at which time hot and dry conditions prompt all but the gravid females to traverse down the mountain to lower elevations in search of water and more readily available prey. During these periods of dispersal, timber rattlers may travel from their den sites as far as 7 miles,

with the average distance more like 3½ miles.

Timber rattlesnakes mate just prior to returning to their dens in autumn, with the females becoming gravid after emerging from hibernation the following spring. Gravid females remain close to

their denning crevices throughout the summer, and will not feed until after their babies are born at summer's end. Gerry did however mention the possibility that gravid females may feed in the period immediately following egress from their dens during the preliminary stages of their gestation. The females give birth from late August through September, affording mothers and offspring precious little time to venture out and find a meal before the threat of autumn frosts necessitate their return to the den. If they are unsuccessful in obtaining a meal, their odds of making it through hibernation decrease, especially for the neonates. Females don't reach sexual maturity until they are 7-8 years of age, reproducing only once every 3-4 years with litter sizes ranging from 3 to 9 young. With a life expectancy of around 20 years, it is easy to understand how the loss of even one breeding age female can have a devastating effect on the long term survivability of a population of timber rattlers at a particular den site.

Gerry's overview of the timber rattlesnake in New England included a comparison of den sites known to exist during the time Europeans first settled the region some 300 years ago, and those in existence today. Once widespread throughout the six New England states, the timber rattlesnake can now be found in only four of them. They were declared extinct in Maine by 1863. Rhode Island's last confirmed specimen was seen in the early 1970s, though they were not officially declared extinct there until 1978. Remnant populations still remain in Vermont and New Hampshire, but they are barely hanging on. Connecticut and Massachusetts have the largest number of active den sites, but they are mostly limited to the western portions of the states, in the region of the Berkshire Mountains.

There are numerous reasons responsible for the decline of the timber rattler in New England, most of them attributable to man's settlement and development of the region. Most of the forests in New England had been clear-cut by the early 1800s, with the land being developed for agriculture and the timber used for construction. This wholesale deforestation destroyed much of the snake's natural habitat. Many of these deforested regions have since recovered their trees, but the timber rattlesnake has been unable to stage a similar comeback.

Considered a threat by settlers in the region, timber rattlers were exterminated as a matter of course. The state of Massachusetts even went so far as to place a bounty on the snakes in the 1800s, organizing hunting parties to seek them out and kill them during harvest seasons.

Although the timber rattlesnake is currently protected throughout the Northeast, man's ceaseless development of the region continues to have a detrimental effect on the species. Homes and industrial parks are now springing up in areas that were once considered too remote or difficult to develop. These intrusions into the timber rattlesnakes last remaining habitat can only serve to further fragment and isolate the remaining New England populations. This in turn will lessen the opportunities for groups from different den sites to intermix, thereby reducing their genetic diversity. Gerry noted that this phenomenon is already occurring at some of the smaller more isolated den sites, where snakes exhibiting genetic defects such as albinism and pattern aberrancies are being seen more frequently.

Cars are also playing a major role in the timber rattlesnake's decline. The snakes are especially vulnerable during the summer when their migratory journeys force them to cross roads. These roads are reaching further into these remote areas than ever before, and the resultant loss of snakes is considerable. I'm sure the fact that many motorists actually go out of their way to run over a snake will come as no surprise to anyone reading this column.

Gerry indicated that some efforts are being made to develop a captive-breeding program for timber rattlers from specific localities, with the hope of reintroducing them to abandoned den sites at some future date. The timber rattlesnake has proved to be extremely difficult to breed in captivity. Gerry's own attempts at breeding a captive pair have been rewarded twice with limited success, with the female producing only two or three living offspring and the remaining ova being delivered as unfertilized slugs.

Gerry concluded his presentation with some thoughts on what is being done and what needs to be done to stop the decline of the timber rattlesnake in the Northeast. Efforts are being made to stem the ongoing tide of fear and persecution directed towards the timber rattler by educating the public about the true nature of the animal. These educational campaigns are being focused on those who live or work in close proximity to active den sites as they are the ones who stand the greatest chance of seeing a timber rattler in the course of their daily lives. Gerry was pleased to report that this increased level of public awareness was beginning to pay off, evidenced by an increase in the number of calls received by the Rattlesnake Recovery Team requesting removal and relocation of errant timber rattlers. In years past, the solution to the dilemma of a wayward rattlesnake in the yard or garage would most certainly have meant killing the snake.

According to Gerry, the most important step to insuring the survival of the timber rattlesnake in the New England remains to be taken, for this would require protection not only of the snakes but of their habitat as well. Throughout the Northeastern states laws prohibiting the possession and/or molestation of timber rattlesnakes are in effect, yet no laws exist defining limitations on development of land adjacent to den sites. Unless such laws are enacted, the future of the timber rattlesnake in New England would appear to be very bleak indeed.

Thanks to Gerry Salmon for his excellent presentation.



The popular CHS exhibit at the 1998 Chicagoland Pet Show.

CHS goes to the dogs (and cats) . . .

For three days, March 20–22, a plucky team of CHS members preached the herpetological gospel to the mammal-loving masses at the Chicagoland Pet Expo. The Expo is held yearly at the Arlington Park Racetrack and always draws a huge crowd of visitors eager to check out the multiplicity of pets and pet-related products assembled there. This year marked the CHS's fifth appearance at the show, and our exhibit has become more popular as the years have gone by. Here's a run-down of the folks who unselfishly gave of their time, patience and sanity while graciously responding to the all-too-familiar queries, "Does it bite?", "Is it poisonous?" and, my personal favorite, "Is that thing real?"

President Steve Spitzer, Sally Hajak and any other members who happened to be in the vicinity rode herd over the turtles and the crowds of children at the famous CHS turtle pen. The pen is a favorite stopping spot because the turtles are fascinating, and the pen's sturdy bench-like perimeter provides a convenient place to rest for those visiting our exhibit. Next door to the pen, Bob Bavirsha conducted a nonstop clinic on the common snapping turtle which featured an adult, two juveniles and a baby of the species.

Lori King-Nava, Jenny Picciola and Char Haguewood were on hand representing the newly formed Iguana Squad, a group established with the intent of advising green iguana owners on how to better care for their charges. They also strive to redirect the interests of would-be green iguana owners toward some of the less daunting saurians that are currently available in the pet trade. The growth potential of the green iguana species was graphically represented by Pablo King-Nava and Jade Picciola, two of the most magnificent examples of full-grown male green iguanas that one could ever hope to see.

The less daunting saurians mentioned above were represented by a bearded dragon, a bluetongue skink, a Chinese water dragon and a leopard gecko displayed by their respective owners, Audrey Vanderlinden, Gino and Letty Martinez, Karen Bielski and Jenny Vollman. Jenny also managed to coordinate the efforts of the CHS members working the show,



Columnist Gary Kostka shows off Berkeley, his California kingsnake, at the Chicagoland Pet Expo.

while simultaneously pacifying a three-year-old American alligator, which she cradled in her arms. Inquisitive visitors were emphatically told that alligators do not make suitable captives, and that this particular one was merely making a guest appearance and was destined to be returned to its natural habitat in southern Florida.

No CHS exhibit would be complete without serpents and this one was no exception. Ron and Dottie Humbert held court over their ever-popular snake tree featuring a batch of multi-hued corn snakes slithering amidst the gnarled branches of their driftwood jungle gym. Bob Ryan shouldered an impressive 8-foot boa constrictor named Cooper, whose ill-timed elimination of fecal matter caused quite a stir in the crowd of curious onlookers. My own contributions to the show included Corny the cornsnake, Berkeley the California kingsnake and Audie the Central Baja gopher snake. Corny was less than thrilled with the all the attention and spent most of his time in his display cage, leaving Berkeley to handle the lion's share of the public relations duties. Audie was opaque, coming along for the ride solely to provide an example of how a snake looks when it is about to shed its skin.

Last, but certainly not least, were Gary Fogel, Vaughn Calloway and my 10-year-old son, John. Gary captured the event on film, provided comic relief and made sure that abundant quantities of Reptilefest flyers were strategically placed throughout the exhibit area. Vaughn helped out at the booth on Sunday, and provided some much-needed muscle power when it came time to pack up our gear at the end of the day. John played the role of utility infielder, cheerfully running errands or lending a helping hand whenever called upon. He was also more than willing to accompany any of our female members if they chose to venture off to see the rest of the show.

Thanks to all the members who took part in the 1998 Chicagoland Pet Expo. I just hope that I haven't forgotten to mention any names. Special thanks go out to Jenny Vollman for the exemplary job she did in coordinating the CHS appearance at the Expo. Thanks again to Jenny and to Sally Hajak for schlepping the turtle pen, signs and sundry equipment to the show, setting it up and then reversing the process at show's

end. Their dedication and tireless efforts are an invaluable asset to the CHS.

Last call for ReptileFest '98 . . .

Quick! There may still be time to take part in the event that is shaping up to be the herpetological happening of the year, **ReptileFest '98**. But you've got to act fast or you'll miss it. So if you think you might enjoy gabbing about your gecko, or boasting about your boa, or touting your Texas toad to hundreds of curious onlookers who'll be hanging on your every word, then you'll surely want to participate in this year's 'Fest.

As you read this, you may wonder "How can I take part in this herpetological extravaganza?", or "How can I seize this opportunity for fame and adulation for myself and my pet skink?". Well, I'll tell you how. . . . After deciding which herp(s) from your collection you'd like to exhibit, it's imperative that you call Lori King-Nava at (773) 477-3645 or Gary Fogel at (773) 935-6938 to let them know that you want to participate and what animals you'll be bringing along. They'll take care of the rest, and I guarantee they'll be delighted to hear from you. That wasn't so hard now was it?

Since you probably know about all the details concerning ReptileFest '98 from reading the past few issues of the CHS *Bulletin*, I won't bother telling you that it's on May 2-3, 10 A.M. - 6 P.M., at Northeastern Illinois University's Alumni Hall, and that the University is located at Bryn Mawr and Central Park Avenues in Chicago, because time is of the essence. So pack up your python, tether your turtle or do whatever it is that you need to do to take part in ReptileFest '98. I know you won't regret it. Hope to see you there!

Thanks for your indulgence. See you next month.



Ravtek®

BIO-TEMP RAY GUN

Remote Infrared Temperature Read-Out (C° or F°)

BTRGun, laser sighting:	\$ 249.00
BTRGun, no laser:	169.00
BTRGun, with laser, calculating functions and alarm:	349.00
Soft carrying case:	30.00

Tax / shipping extra
Discount: 3 or more

Range: -25 to +750°F

For Information/Ordering
RAY PAWLEY CONSULTING
P.O. Box 218
Hinsdale, IL 60522
Phone/Fax: 708/445-8311

USED BY:

- Zoos
- Aquariums
- Pet Industry
- Field Research
- Laboratories
- Agriculture
- Veterinarians
- Breeders

Equipment Safety Check!

Herpetology 1998

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

EFFECTS OF HARVESTING ON BODY SIZE IN RED-EARED SLIDER POPULATIONS

L. M. Close and R. A. Seigel [1997, Chelonian Cons. and Biol. 2(4):563-566] studied the effects of human harvesting in 1990-1991 on red-eared sliders (*Trachemys scripta elegans*) in southern Louisiana and western Mississippi. They collected data on mean body size at eight localities. Sites were classified as either protected (no known public access or harvesting), public (public access allowed, but no known recent commercial harvesting), or harvested (active commercial harvesting of turtles was occurring at the time of the study). Turtles at most sites were collected using standard hoop traps. Traps were checked at least twice daily and no turtles were injured during the study. Turtles from harvested areas were either collected for the authors by commercial hunters, or were purchased at local fish markets. Statistical analysis of the data showed that turtles from the harvested sites were significantly smaller than all other turtles. However, significant differences also occurred among sites within a particular harvest condition, indicating that even when harvest effects are controlled, there is variation in size structure among sites. The authors also conducted 19 interviews of dealers and local residents. Almost all reported a large local decrease in the past few years in the numbers of turtles, most notably in red-eared sliders, alligator snapping turtles (*Macrolemys temminckii*), common snapping turtles (*Chelydra serpentina*) and softshells (*Apalone* spp.). The general opinion among collectors was that habitat destruction, pollution, increased predation from raccoons and opossums, and incidental mortality from fishing were the major causes of these declines. Although this study supports the hypothesis that harvesting of adult sliders is having an impact on turtle populations, at least in terms of mean body size, whether such differences in body size can lead to declines in slider populations is unknown.

ASHY GECKO SOCIAL BEHAVIOR

R. Regalado [1997, Herpetological Natural History 5(1):41-52] recorded social behaviors of captive ashy geckos (*Sphaerodactylus elegans*) in captivity. The repertoire was similar in both sexes and similar to those shown by diurnal geckos. Vertical head movements were the most distinctive behavior. In the first phase of all social interactions, individuals used similar acts regardless of the sex of the other lizard. However, when individuals tongue-flicked other lizards, a dichotomy in their subsequent behaviors was evident. Males behaved aggressively toward other males whereas they courted females. Females acted passively when facing males but behaved aggressively toward other females. In addition, males experimentally rubbed by a live female were courted by other males. This suggests that tongue-flicking is an essential behavior for sex identification in this species, and that the detection of pheromones could be involved.

THERMAL ECOLOGY AND REPRODUCTIVE CYCLES IN THE DICE SNAKE

L. Luiselli and P. Zimmermann [1997, Amphibia-Reptilia 18(4):383-396] compare aspects of thermal ecology and reproductive cycling in two populations of the dice snake (*Natrix tessellata*), a semi-aquatic natricine species widely distributed across Europe. One population was studied near Leibnitz, Styria (southeastern Austria), and the other in the Mounts of Tolfa near Rome (Latium, central Italy). The climate was much colder in the Austrian than in the Italian site. Snakes from the two populations were similar in various traits, including average body temperature, higher mean body temperature of gravid than nongravid individuals, significantly higher substratum temperatures selected by gravid than by nongravid individuals, trends of relationships between body, air and substratum temperatures, average length of reproductive females, and average preparturition mass of reproductive females. However, Austrian snakes were found in water significantly less often than their Italian conspecifics (although in both populations nearly all individuals occurred close to water bodies), and showed a lower frequency of reproduction (bi-annual rather than annual) than Italian ones. The presented data are discussed in the light of suboptimal occupation of the colder area by Austrian snakes, and conservative rigidity of natural history and ecological traits in a widespread species such as *N. tessellata*.

EMIGRATION OF RADIO-IMPLANTED SPOTTED SALAMANDERS

D. M. Madison [1997, J. Herpetology 31(4):542-551] validated radiotelemetry and implant procedures and used the implants to examine the occurrence and variability of emigration (i.e., migration from the breeding pond) and terrestrial refuge use between breeding periods in *Ambystoma maculatum*. Studies of feeding and weight change showed no long term effects of the implant procedure, and the survival of implanted salamanders in the field was similar to that in natural populations. Emigration was facultative and occurred during the spring, fall, was split between spring and fall, or it did not occur. The inhibition of emigratory behavior during the summer caused a conspicuous seasonal bimodality in movement that was hypothesized to be a consequence of increased predator activity from late spring through early fall. Small mammal burrows were used almost exclusively as terrestrial refuges, and those of *Blarina brevicauda* were used the most, especially between spring and fall. Deeper, *Peromyscus*-type burrows were commonly used during winter. An early spring snowstorm revealed that occupying small mammal burrows was extremely important to survival. The author hypothesizes that *A. maculatum*, through a special association with *Blarina brevicauda*, is able to readily access the protective leaf-litter runways.

THE MEDIAN LINGUAL PROCESS OF FROGS

T. Grant et al. [1997, American Museum Novitates 3212] unexpectedly discovered a median protuberance on the tongue of several *Colostethus* spp. (Dendrobatidae), the first knowledge of this unusual anatomical structure in New World frogs. They suggest the general term *median lingual process* for all similarly positioned structures, previously known only in certain Asian and African frogs of the superfamily Ranoidea. References to the process are mostly buried in taxonomic descriptions under the term “median papilla,” although it is many times larger than the tongue’s fungiform papillae (which carry taste receptors) and the still smaller filiform papillae. Scanning electron microscopy shows a cell-surface ultrastructure of microridges (and microknobs) as is characteristic of certain other epithelia. The function of the median process is unknown but conceivably involved in the sophisticated anuran chemosensory system. From a survey of museum specimens and literature, the median process is shown to occur in one or more species of at least 16 genera of three nominal families and several subfamilies of Old World ranoids. Considerable variation in the median lingual process was found and is preliminarily classified under several morphologies. The authors describe a new species of dendrobatid, *Colostethus atopoglossus*, as among those having a median lingual process. It is a small, web-footed frog from cloud forest of the Cordillera Occidental, western Colombia. It is similar to *C. lacrimosus* Myers in having a lingual process, paired cloacal tubercles, and a distinct, white postocular stripe running obliquely from eye to arm. *Colostethus atopoglossus* is larger and is bright yellow-orange on the posterior belly and underside of thighs, whereas the smaller *C. lacrimosus* is ventrally white with grayish thighs. Both are riparian, but *C. atopoglossus* is an active, extremely abundant montane forest frog at elevations of 1800 to 2260 m, whereas *C. lacrimosus* is found in Pacific-side lowland rain forest (< 700 m), where it is secretive and believed to exist in low population densities.

THERMOREGULATION IN THE MOORISH GECKO

Z. Arad et al. [1997, Amphibia-Reptilia 18(3):269-282] studied temperature selection in a thermal gradient and the physiological responses to heat exposure in the Moorish gecko, *Tarentola mauritanica*, from Crete. In line with previous indications that the Moorish gecko has a bimodal activity pattern, they found a bimodal temperature selection with modes at 27–28 and 30–32°C. In this respect, it resembles the closely related Israeli gecko, *Ptyodactylus guttatus*. However, *Tarentola* is more susceptible to heat exposure and has a moderate thermoregulatory capacity compared to *P. guttatus* and this is probably related to its reaching more northern latitudes than *Ptyodactylus*. During heat exposure (up to 40°C) oxygen consumption increased significantly and was not sustained by the moderate increase in heart frequency. The authors found a significantly lower heating rate than cooling rate in *Tarentola*. This is in accord with allometric predictions for its low body mass and might stem from the high mass-specific evaporative water loss and from the relatively small increment in heart rate during heat exposure which may adaptively retard heat gain from the environment and maximize its activity periods.

VARIATION IN BROWN SNAKES

R. B. King [1997, J. Herpetology 31(3):335-346] assessed sex, family, and microgeographic variation in body size, head dimensions, tail length, and scalation from 273 wild-caught brown snakes (*Storeria dekayi*) from seven island and mainland sites near Lake Erie and from 145 neonates born to 25 wild-caught females. Significant differences between males and females were present both in wild-caught snakes and in neonates, with females exceeding males in snout-vent length and number of ventral scales and males exceeding females in tail length, head dimensions, and number of subcaudal scales. Previous analyses have typically focused on the effect that sex differences might have on adult snakes, e.g., in foraging or reproduction. The presence of sex differences among neonates raises the possibility that these differences may be of ecological and evolutionary significance in younger snakes as well. Significant differences among families were found in neonates for all characters except number of labial scales, and significant heritability (estimated from offspring-dam regression) was found for tail length, head length, and numbers of ventral, subcaudal, and temporal scales. Heritable variation in scalation is well known, but this is the first study to document heritable variation in snake morphology. This result is important because heritable variation is an implicit assumption of hypotheses for the evolution of sex, population, and species differences in morphology. Significant differences among sites were found for adult snout-vent length, head dimensions, number of subcaudal scales, and number of temporal scales. In addition, significant phenotypic correlations (e.g., among head dimensions, between tail length and number of subcaudal scales, between snout-vent length and number of ventral scales) and genetic correlations (e.g., between tail length and number of subcaudal scales, between head length and number of ventral scales) were found between pairs of traits. The presence of these correlations suggests that groups of traits may be influenced by the same genetic or ontogenetic processes and may exhibit patterns of correlated evolution.

EGGS OF THE WESTERN BOX TURTLE

P. M. Nieuwolt-Dacanay [1997, Copeia (4):819-826] tested optimal egg size theory using data from the western box turtle, *Terrapene ornata luteola*, obtained from 272 X-rays of 124 different turtles, 72 of which were gravid. Clutch size was positively correlated with maternal body size, but egg width was not related to either maternal length or width or clutch size but was related to maternal mass. Pelvic width was significantly correlated with egg width and maternal body size. Egg size varied little, as predicted by optimal egg size theory. Mean clutch size was 2.70 (n = 77) and mean egg width was 2.66 cm (n = 203); clutch size is smaller and egg width is larger than for *T. o. ornata*. During the three-year study, two years had unusually wet springs, and egg production was high; one year had a dry spring, and a smaller proportion of females produced eggs; but mean clutch and egg sizes were not significantly different from other years. These data indicate that spring rains may increase the proportion of females laying eggs in the summer, and in years with dry springs, turtles may defer egg-laying completely, rather than reducing annual output.

SEXUAL SIZE DIMORPHISM IN THE WESTERN DIAMONDBACK

S. J. Beaupre et al. [1998, *Copeia* (1):40-47] observe that the western diamondback rattlesnake (*Crotalus atrox*) is sexually dimorphic (adult males larger than females) throughout its range, and that a comprehensive analysis of the ecological and evolutionary sources of sex differences in growth and size requires a detailed understanding of growth trajectories during ontogeny. They studied a population of *C. atrox* in the upper Sonoran Desert of central Arizona. Specifically, they asked at what point during ontogeny males and females diverge in size: at birth, during juvenile growth, or as mature adults? They used mark-recapture data and a novel analysis of rattle characteristics to test for sex differences during each of these three ontogenetic stages. Their analyses suggest that male and female neonates are similar in size. Juvenile growth rates also appear to be uniform between sexes. However, males and females begin to diverge in size beyond sexual maturity, when female but not male growth rates become undetectable given their recapture intervals. Results indicate that, when partitioned into its lifecycle components, sexual size dimorphism can be expressed at different stages and may be affected by a variety of behavioral, bioenergetic, and selective forces. Accordingly, studies of proximate and ultimate causation in sexual size dimorphism may benefit from consideration of the ontogeny of size separately in males and females.

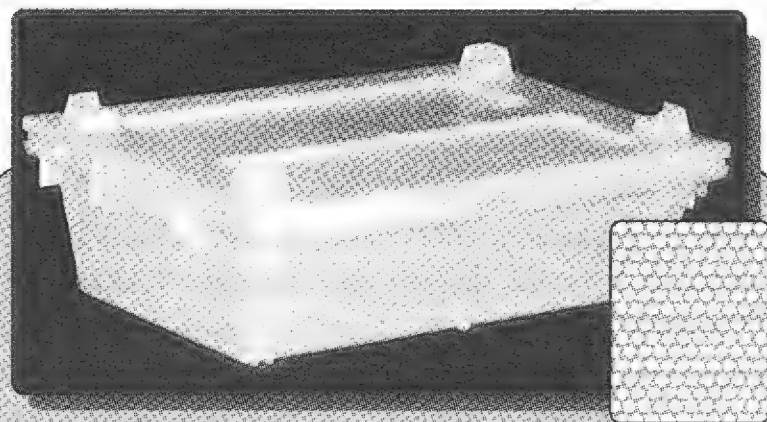
SEXUAL DIMORPHISM AND DIET IN A RARE NAMIBIAN SNAKE

W. R. Branch et al. [1997, *African J. Herpetology* 46(2): 89-97] examined and dissected museum specimens to obtain original data on morphology, sexual dimorphism, feeding habits and reproductive biology of the rare western keeled snake (*Pythonodipsas carinata*) from Namibia and Angola. This small, slender snake is nocturnal. Females mature at a larger size (47-51 cm snout-vent length, SVL) than males (29-31 cm SVL), and attain considerably larger maximum sizes (to 77 cm SVL). At the same body length, males have significantly longer tails than females. Relative to SVL, analysis of covariance detected no significant differences between the sexes in head length, head width, body width, or head shape (i.e., width relative to length, or relative eye size). All prey items were vertebrates, with lizards comprising 67% of the diet, rodents 25%, birds 4%, and unidentified vertebrate bones 4%. Among lizard prey, geckos (39% of all prey) and skinks (18%) predominated. Nocturnal geckos (*Afroedura Chondrodactylus*, *Palmatogecko* and *Pachydactylus*) as well as diurnal ones (*Rhoptropus* and *Narudasia*) were eaten. All skink prey were *Mabuya* sp. Mammalian prey were eaten primarily by larger snakes. The unusual fragmented head shields and enlarged palatine teeth of *Pythonodipsas carinata* may be adaptations that permit sleeping diurnal prey to be extracted from retreats.

Health Food for your herps!



Highest quality rodents are available in all sizes from pink mice to jumbo rats. Fresh frozen crawler mice are only 17¢ each in lots of 2,000. All frozen animals are shipped in insulated boxes.



Nearly 9,000 holes and they still can't escape!

The new TTC is ideal for transporting, breeding and storing your mice, rats, snakes and lizards. The strong plastic TTC has over 2,200 holes on each side and over 4,500 holes on the lid to provide maximum air circulation even when stacked. Each TTC can be divided into 2, 3 or 4 compartments and its smooth plastic construction makes washing a snap.

273 Hover Avenue • Germantown, NY 12526-5320
518-537-2000 • Fax 518-537-7287

Unofficial Minutes of the CHS Board Meeting, March 13, 1998

The meeting was called to order at 7:43 P.M. All board members were present.

Officers' and Committee Reports

The minutes of the February Board of Directors meeting were read and accepted.

The Treasurer's report was read and accepted.

Current membership is 1011. Revised membership application forms are being printed and will be ready in time for the Arlington pet show.

President Steve Spitzer expressed his concerns about not having the raffle, library or sales table at the February general meeting. All parties responsible for these meeting amenities have agreed to inform the president, when possible, if an absence from the general meeting is imminent and/or to have made arrangements for these items to be accessible to other board members for use at the meeting.

Vice-president Jack Schoenfelder reported that there are only a couple of months left this year for which speakers have not yet been found. Jack also informed the board that our 1997 income tax forms have arrived. The filing due date is May 15, 1998.

Library: There are many books in the library in need of repair. Jennie will look into covering all books that have dust jackets to prevent them from being torn.

Website: There have been 680+ hits to the CHS website since the counter was added to the site a few months ago. New original artwork will be added to the site soon along with the ReptileFest information flyer.

Shows: The Volo Bog show is in April. Participants will be Gary Kostka, Ilene Sievert and Jenny Vollman. The Illiana Garden Pond Society has asked the CHS to speak at their meeting on July 18, 1998, held at the Crystal Palace Perennials Garden Center in Cedar Lake, Indiana. Ron Humbert, Jennie Picciola and Jack Schoenfelder will address the topic of keeping reptiles and amphibians in backyard ponds. The Madison School in Wheaton, Illinois, will be having an Earth Day celebration of sorts on June 5. Ron Humbert and Jack Schoenfelder will represent the CHS in this event.

ReptileFest 1998: Steve Spitzer asked Gino Martinez to prepare a complimentary membership package for Steve Dale of WGN radio. Lori King-Nava will be on Mr. Dale's radio show in April to promote ReptileFest. She will present the membership package to him then.

CHS Picnic: The permit has been obtained. The picnic will be held on Sunday, August 2, at the Catherine Chavalier Woods forest preserve in northwestern Cook County. Details will follow as the picnic date approaches.

Old Business

Zoo Trip: Forty-two seats have been sold for the St Louis Zoo trip. The bus is nearly at capacity.

New Business

New display cages are being built to replace the badly-worn modular cages. The new cages will be available for ReptileFest and future shows. The old module will be stored until a new owner is found.

The September Board of Directors meeting will be held at Jack Schoenfelder's summer home in Michigan.

Round Table

Gary Fogel reported on the security staff's monitor shirts for ReptileFest. They are ready and will be on display at the general meeting in March.

Mike Dloogatch received a flyer advertising the Chicago Academy of Science's Spring Plant Sale to be held Saturday, May 9, 10:00 A.M. - 3:00 P.M., in Lincoln Park at Cannon Drive and Fullerton Parkway.

The meeting adjourned at 9:58 P.M.

Respectfully submitted by Recording Secretary Jennie Picciola

**THE
GOURMET
RODENT™**

VISA MasterCard AMERICAN EXPRESS Card

RATS AND MICE

Bill & Marcia Brant
6115 SW 137th Avenue
Archer, FL 32618
(352) 495-9024
FAX (352) 495-9781
e-mail: GrmtRodent@aol.com

© All Rights Reserved

Advertisements

American Federation of Herpetoculturists: A nonprofit national membership organization of herpetoculturists, veterinarians, academicians and zoo personnel involved in the captive husbandry and propagation of amphibians and reptiles. Membership includes highly acclaimed magazine, *The Vivarium*, dedicated to dissemination of information on herpetocultural accomplishments, herp medicine, breeding and maintenance, field studies and adventures, enclosure design and much more. AFH membership is \$26. Send information requests to: AFH-News, P.O. Box 300067, Escondido CA 92030-0067.

Artist wanted: My name is Jim Hatfield. I wrote the book, *Green Iguana—The Ultimate Owner's Manual* and I have an iguana column for *Vivarium* magazine. I am looking for some talented CHS member who could draw cartoons and/or iguana illustrations for my column and articles in other reptile magazines. Send me copies (*only*) of your work to: Jim Hatfield, P.O. Box 102, Lake Oswego OR 97034-0014. I will then get in contact with you.

For sale: *Bulletin* boxes, \$10 each. Library quality with "Chicago Herpetological Society" imprinted. Each container holds about two years' worth of *Bulletins*. Send check or money order to Chicago Herpetological Society, 2060 N. Clark Street, Chicago IL 60614. Allow four weeks for delivery.

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail <GrmtRodent@aol.com>.

For sale: murine-pathogen-free rats and mice available in all sizes, live or frozen: pinkies, fuzzies, crawlers, small, medium and large. Frozen crawler mice in lots of 2000, \$.17 each. Also available, full grown hairless mice. FOB shipping point. Master Card accepted. Call (518) 537-2000 between 8:00 A.M. and 5:00 P.M. or write SAS Corporation, 273 Hover Avenue, Germantown NY 12526 for prices and additional information.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice since 1989. Our mice are frozen separately and vacuum-packed to greatly extend freezer life by reducing freezer burning and preserving vitamin and nutrient content. We feed our colony a nutritionally balanced diet of Mouse Chow and four types of natural whole grains and seeds. Prices: pinkies, \$25/100; fuzzies, \$30/100; weaned, \$35/100. Quantity discounts available. Ray Queen, P.O. Box 85, Alpine TX 79831. Call (800) 720-0076 or E-mail us at <mousefac@overland.net>. Fax (915) 837-0156.

For sale: from Bayou Rodents, excellent quality feeder mice and rats. Every size available. Pinks starting at \$20/100. Orders are shipped by overnight service Monday thru Thursday. We accept Visa, MasterCard and Discover. For more info, contact Rhonda or Peggy, (800) 722-6102.

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice available: small newborn pinks up to jumbo adults. Prices start at \$25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: In stock, Flex-watt and Ultra-therm heating products. **Frozen rodents** always available. Mice: pinks-crawlers, 3/\$1; weanlings, 40¢; subadult, 50¢; adults, 65¢; large adults, 75¢. Rats: small, 85¢-\$1; medium, \$1.25-2.00; large, \$2.25-2.75; jumbo, 3/\$10. Call on quantity discounts [note: discount on orders picked up at CHS meetings]. Live rodents available at higher prices. **Available now:** newsletter/catalog—many unique/hard-to-find herp husbandry items. Send business-size SASE for catalog, or call. Scott J. Michaels, D.V.M, Serpent City, P.O. Box 657, Island Lake IL 60042, (815) 363-0290.

For sale: Herp bags—colors vary, translucent ripcord nylon, super lightweight, extremely durable construction with hot corners sewn in, double seamed. Custom sizes made upon request. Sizes: 46" × 14", \$7 each; 24" × 12", \$6 each; 24" × 6", \$5 each. Shipping fees, \$1 for first bag, \$.30 each additional bag. Nicole Lechowicz, 290 Warren Road, #69, Carbondale IL 62901, (618) 457-2783.

For sale: natural history books. *Wildlife in Australia Illustrated* by Charles Barrett (no date, perhaps early 1950s), 240 pp., many b/w & some color photos, 40 pp. on reptiles, \$20; *South African Frogs* by Passmore and Carruthers, 1979 (first edition), many color, b/w photos, includes record of frog calls, \$50; *Reptiles and Amphibians in Your Home* by Breen, 1967, 280 pp., color, b/w photos, \$12; *Reptiles Round the World* by Pope, 1957, 194 pp., many drawings, ex-lib., but very good condition, \$20; *Louisiana Birds*, 1974 (3rd edition), 651 pp., 41 color plates, b/w photos, DJ, \$27. All books hardbound, very good to excellent condition, prices postpaid. William R. Turner, 7395 S. Downing Circle W., Littleton, CO 80122, (303) 795-5128.

For sale: Neodosha cage 36 wide × 18 deep, includes heat mat, thermostat, stand, \$85 Karen, (217) 854-9356, E-mail <kblakeley@ctnet.net>. [IL]

For sale: Selling most of my collection. Great prices—some freebies! Some herps, but mostly arachnids. Andy Davies, (773) 279-1541.

For sale: one male and one female yellowfoot tortoises, 13-14", proven breeders, \$350/pair. Art, (312) 733-7594.

For sale: two Burmese brown tortoises, 6-7", captive born and raised, sex unknown, \$300 each or \$500 for both. Also, c.b. African spurred tortoises, \$50 each. Will trade for other tortoises. Looking for Egyptian Greeks that were imported several years ago. I need males and also will buy hatchlings from this species. Please help. Bob, (520) 868-4659. [AZ]

For sale: eyed (or ocellated) skinks, c.b. African barrel skink with beautiful (eyed) pattern, hearty, easy-to-care-for, medium-sized skink. Prices reasonable. Jim, (630) 629-8144.

For sale: two large adult female northern blue-tongued skinks, \$100 each; female Mexican rosy boa, c.b. 1995, \$85. Chicago area pick-up only. (708) 361-5835.

For sale: c.b. '97. One male and three female Arizona mountain kings; three male and five female Huachuca mountain kings (*Lampropeltis pyromelana woodini*). One female Arizona and 2.1 Huachucas are not feeding voluntarily, however "assist-feed" very easily, and have been given whole pinks every 7 to 10 days. Clearance of the '97s to make way for the '98s! \$85 each, two for \$150, three for \$200, five for \$300, or the big deal, 10 for \$575. Henry Cohen, 24 St. Johns Place, Buffalo NY 14201, (716) 881-6724.

For sale: from Hiss 'n' Things, Inc.: White oak rat snakes; trinket rats; blue beauty rats; coastal carpet pythons; pure jungle carpet pythons; Macklot's pythons; Amazon tree boas; Cuban boas; frilled dragons 9/97. Jim Kavney, (305) 664-2881. URL <<http://www.hiss-n-things.com>> E-mail <hissn1@aol.com>. [FL]

For sale: one male and one female orange Pueblan milksnakes, 3 years old from Seven Generations Stock, nice, hibernated and ready to breed, produced outstanding hatchlings last year, \$375/pair obo; one male and one female Kenyan sand boas, nice orange pattern, 3 years old, ready to breed (female possibly gravid), \$175/pair obo; one male and one female Burmese pythons, c.b. '97, female albino and male hetero for green/albino, nice, make offer; one male and three females, young breeding group of leopard geckos (will give away additional young male at no charge), produced several amelanistic specimens last year, high yellow, \$200/group obo. All proceeds will go to the Wildlife Education Outreach Program at the Lake Forest Recreation Center. Trades for Illinois native specimens considered. Rob Carmichael, (847) 615-4388, leave message, or E-mail <RCarmic416@aol.com>

For sale: **Premium captive-produced reptiles**. **Piebald black pines**; Brazilian rainbow boas (Lamar); blonde trans-Pecos rat snakes; Baja rat snakes; gray-banded kingsnakes (Langtry); Okeetee corns; melanistic garters (double hets); Peruvian matamatas; Mexican redleg tarantulas. Also, feeder mice and rats, husbandry items, bedding, etc. Mike Stefani, (630) 372-3936.

For sale: beautiful, tricolor kingsnakes. Send SASE for **free** list. Also, free phone consultation on snake husbandry problems as a service to the herp community. Robert Applegate, P.O. Box 338, Campo CA 91906, (619) 478-5123. Thank you for your attention.

Advertisements (cont'd)

For sale: from Casey Lazik Reptiles, specializing in rare pythons and knobtail geckos. Expected offspring for 1998 include black-headed pythons, womas, diamond pythons, centralian pythons (*Morelia bredli*), jungle carpet pythons, pygmy pythons (*Antaresia perthensis*), Angolan pythons, smooth knobtail geckos (*Nephurus l. laevis*), albino and heterozygous knobtail geckos (*N. l. pilbarensis*), rough knobtail geckos (*N. asper*), thick-tailed geckos (*Underwoodisaurus mii*), albino and anerythristic Honduran milksnakes, western green ratsnakes (*Senticolis triaspis intermedia*) and Tarahumara mountain kingsnakes. For a price list, send SASE to Casey Lazik Reptiles, P.O. Box 55023, Shoreline WA 98155, (206) 368-2919. E-mail <nephurus@webtv.net>. Visit our website at <<http://www.reptilia.com/lazik/>>.

For sale: Kenyan sand boas — axanthic (c.b. '97), \$175 each or \$300/pair; possible hets for axanthic or albino (c.b. '97), \$50 each; one male hetero albino (c.b. '96) and one female albino (c.b. '95), ready to breed, \$1400/pair. Also, one male jungle carpet python, c.b. '95, Sipperley stock, average yellow, jet black, \$100; one male and one female coastal carpet pythons, c.b. '97, unrelated, \$195/pair; two female spotted pythons (*Antaresia maculosa*), c.b. '97, hetero for "granite" phase, \$75 each; one male and one female smooth knobtail geckos, c.b. '97, ready to breed 7/98, gorgeous, \$3000/pair; one male and one female womas, c.b. 7/97, 3½', beautiful color, eating rats, \$6600/pair. Call (619) 265-7557. [San Diego]

For sale: from **Gaines Reptiles, Inc.** — **\$\$\$ great investments with immediate returns \$\$\$**. Due to very favorable employment changes, I am offering two of the most successful and highly sought after breeding projects in the reptile industry today — albino boa constrictor and South American tricolor hognose (*Lystrophis semicinctus*). Each project is in prime condition, cycled, and actively breeding. Project prices range from \$7,000 to \$40,000. At currently competitive market prices, 1998 offspring production could provide 100% return on your investment this year. Serious inquiries only. If these projects are not sold in the next months, I will be selling tricolor hognose hatchlings at \$500–750 and albino & 66% heterozygous Colombian boa constrictors at "below market price." GAINES REPTILES, INC. Bill Gaines, phone (317) 878-4042, voice-mail (800) 689-3040, E-mail <bgaines@iccn.net>.

For sale: **albino boas**. Ethical private breeder who is not trying to make a living off this *hobby* will be offering the following '98 babies from my "mite-free" genetically diverse collection that has *never* been exposed to the I.B.D. virus. Available this spring: Colombian boas . . . albinos, heterozygous, possible hets, and my signature bloodline — "Ultra-Golden" Colombian boas (which will also be heterozygous for albinism!) Great snakes at or below market value. Call to discuss pricing or just to "talk snakes." Steven E. Snow, (815) 624-8204, 7–9 P.M. Central Time.

For sale: female D'Albert's python, beautiful, large, long term adult, \$175; 8 male and 18 female leopard geckos, hi-yellow, stripe, jungles, all adult breeders, and one male white-line and one female fat-tail gecko, and 1 female Nicaraguan banded gecko, and two female Mojave Desert banded geckos, entire mixed gecko group, \$750; male Children's python, adult, Barker Stock \$125; creamsicle corn, \$45; albino corn, \$25; Mexican black king \$35; 50/50 Cal king, \$35; Pueblan milk, \$40. Steve Bostwick (515) 274-4580. [IA]

For sale: Brazilian rainbow boas — 2-year-old, 3' female, tame, healthy and a great eater, \$250 — 7-month-old female, \$175; lavender phase Cal. king, \$50. Mark, Strictly Serpents, (847) 854-3259.

For sale: Send SASE to CRC, P.O. Box 0731, Las Vegas NV 89125-0731 for brochures and list of species available. Limited bookings available for guided tours of herpetological collection sites in Nevada. Call/fax (702) 450-0065. URL <<http://www.herp.com/crc/>> E-mail <crsafety@aol.com>.

For sale or trade: unrelated pair of yearling Dumeril's boas, 3' long, \$475/pair. Kevin, (219) 878-8718. [Michigan City IN]

Tours: Adventure tours to Madagascar! Join **Bill Love** seeing and photographing fauna and flora, heavily herp-biased, across the world's least known mini-continent. Maximum fun & photo ops assured on every trip. Contact him at: BLUE CHAMELEON VENTURES, P.O. Box 643, Alva FL 33920. TEL: (941) 728-2390, FAX: (941) 728-3276, E-MAIL: <blove@cyberstreet.com>.

Tours: **Road-riding in Costa Rica!** Treat yourself to the trip of a lifetime! Learn about tropical herps, find them, photograph them, see where they live. **Greentracks, Inc.**, offers the best herpetological tours led by internationally acclaimed herpetologists and herpetoculturists. See the Amazon, visit cloud forests, experience the world's greatest rainforest, super sunsets and good company. Call (800) 9-MONKEY.

Wanted: Illinois native snakes for Wildlife Education Outreach Program (red/eastern milksnakes, black rat snakes, western fox snakes, blue racers, water snakes, green, prairie/speckled/black kingsnakes, bullsnares, etc.). Can be captive-bred or well established wild caughts. Contact Rob Carmichael at (847) 615-4388, Lake Forest Recreation Dept., 400 Hastings Road, Lake Forest, IL 60045, or E-mail <CarmichR@CityLF.LFC.edu>.

Wanted: one pair of blood pythons, *Python curtus brongersmai*. Kevin, (219) 878-8718. [Michigan City IN]

Wanted: small crocodiles, dwarf caimans, water monitors. Bob F. Pierson, 9162 County Road 9N, Mosca CO 81146, (719) 378-2624.

Wanted: adult female red-sided garter snakes. Scott, (919) 934-0110. [NC]

Wanted: big-headed turtles; mata mata turtles; Mexican giant mud turtles (*Staurotypus triporcatus*); exceptionally large common snappers (45 lbs. & up); large alligator snappers (over 90 lbs.); spectacled caiman from Trinidad, Tobago and Surinam; dwarf caiman; smooth-fronted caiman; albino turtles (except red-eared sliders). Walt Loose, (610) 926-6028, 9:00 A.M. – 1:00 P.M. or after 11:30 P.M. Eastern Time.

Wanted: Styrofoam boxes, any size or shape so long as they're not flimsy, preferably with cardboard liners, willing to pay from \$2 to \$5. Bring to CHS meetings. Scott J. Michaels, D.V.M., Serpent City, (815) 363-0290.

Line ads in this publication are run free for CHS members — \$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail <MADadder0@aol.com>.

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, April 29, at the Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, in Chicago. **Robert Applegate**, a private herpetoculturist from Campo, California, will speak on aspects of breeding colubrid snakes and Gila monsters, and whatever else he feels like talking about. Bob was and still is a pioneer in the field of herpetoculture; we are fortunate to have him with us to share his expertise.

The speaker at our May 27 meeting will be **Dr. John Rossi**, a veterinarian from Jacksonville, Florida, and author of the two-volume set, *Snakes of the United States and Canada: Keeping Them Healthy in Captivity*. Dr. Rossi will give us an update on techniques for maintaining some rarely-kept snakes in captivity.

We are required to use the entrance on the west side of the museum. **We are allowed to use the free parking lot to the west of the museum as long as space is available. Your best bet is to try that lot first before settling for the lot to the east of the museum or for the Soldier Field lot. For the latest on the parking situation call our CHS message line, (773) 281-1800, before you come.** Public transportation is an option: the Roosevelt Road (12th Street) bus now goes directly to the museum, thus providing a connection with the el and subway. This bus service runs until 11 P.M.

Turtle Club

The Chicago Turtle Club will meet Sunday, April 26, 1:00–3:30 P.M., at the North Park Village Administration Building, 5801 N. Pulaski, in Chicago.

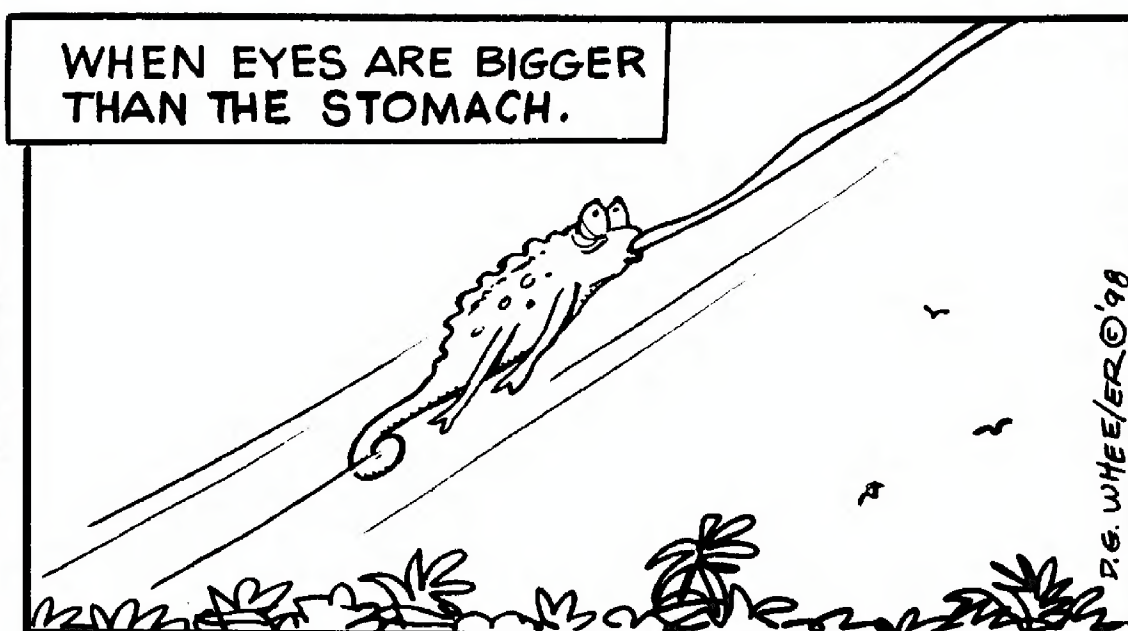
SUMMER COURSES AT BEAVER ISLAND

The Central Michigan University Biological Station is located on Beaver Island in northern Lake Michigan. Each summer the station offers several sessions of college-credit courses in biology. Some courses are for graduate students only; others are for undergraduates; some even offer college credits to high school juniors and seniors. To learn more about the CMU Biological Station, contact Dr. James C. Gillingham, Director, CMUBS-Brooks Hall 335, Department of Biology, Central Michigan University, Mount Pleasant MI 48859, telephone (517) 774-3173.

MOVING??

Please let us know in plenty of time of any change in your mailing address. The *Bulletin of the Chicago Herpetological Society* is sent to our U.S. members by bulk-rate third class mail. This means that the U.S. Post Office will not forward your *Bulletin* with the rest of your mail. This is so even if you make a special request that your magazines be forwarded (such a request only applies to second class mail).

THE ADVENTURES OF SPOT



NONPROFIT ORG.
U.S. POSTAGE
PAID
PERMIT NO. 9869
CHICAGO, ILLINOIS

CHICAGO HERPETOLOGICAL SOCIETY
Affiliated with the Chicago Academy of Sciences

2060 North Clark Street • Chicago, Illinois 60614